

**EPA Superfund
Record of Decision:**

**NEWSOM BROTHERS/OLD REICHHOLD CHEMICALS,
INC.**

EPA ID: MSD980840045

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COLUMBIA, MS

09/18/1989

- REMEDIAL INVESTIGATION REPORT, PHASE I, NEWSOM BROTHERS SITE
- REMEDIAL INVESTIGATION REPORT, PHASE II, NEWSOM BROTHERS SITE
- ENDANGERMENT ASSESSMENT REPORT, NEWSOM BROTHERS SITE
- FEASIBILITY REPORT, NEWSOM BROTHERS SITE
- RESPONSIVENESS SUMMARY
- STATE OF MISSISSIPPI RECOMMENDATIONS
- COMMUNITY ACCEPTANCE
- STAFF RECOMMENDATIONS AND REVIEWS

THE STATE OF MISSISSIPPI HAS CONCURRED ON THE SELECTED REMEDY.

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DECLARATION

THE SELECTED REMEDY IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, ATTAINS REQUIREMENTS THAT ARE APPLICABLE OR RELEVANT AND APPROPRIATE, AND IS COST EFFECTIVE. THIS REMEDY UTILIZES PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE FOR THIS SITE. HOWEVER, BECAUSE TREATMENT OF A PORTION OF THE MATERIAL WAS NOT FOUND TO BE PRACTICABLE FOR THE SITE THIS REMEDY DOES NOT SATISFY THE STATUTORY PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT OF THE REMEDY. SINCE NO HAZARDOUS SUBSTANCES WILL REMAIN ONSITE ABOVE HEALTH-BASED LEVELS, AND NO ONSITE DISPOSAL WILL OCCUR, THE FIVE YEAR FACILITY REVIEW WILL NOT APPLY TO THIS ACTION.

DATE
09/18/89

GREER C. TIDWELL
REGIONAL ADMINISTRATOR

RECORD OF DECISION
SUMMARY OF REMEDIAL ALTERNATIVE SELECTION
NEWSOM BROTHERS/REICHHOLD CHEMICAL COMPANY SITE
COLUMBIA, MISSISSIPPI

#INT

1.0 INTRODUCTION

THE NEWSOM BROTHERS/REICHHOLD CHEMICAL COMPANY SITE WAS PROPOSED FOR INCLUSION ON THE NATIONAL PRIORTIES LIST (NPL) IN 1984. IN 1986, THE ENVIRONMENTAL PROTECTION AGENCY (EPA) FINALIZED THE SITE'S INCLUSION ON THE NPL. THE SITE HAS BEEN THE SUBJECT OF A REMEDIAL INVESTIGATION (RI)AND FEASIBILITY STUDY (FS) PERFORMED FOR THE EPA BY ITS CONTRACTOR CAMP, DRESSER AND MCKEE (CDM). REGULATORY DIRECTION HAS BEEN PROVIDED BY REGION IV THROUGHOUT THE REMEDIAL RI/FS. THE RI REPORT, WHICH EXAMINES AIR, SEDIMENT, SOIL, SURFACE WATER AND GROUNDWATER CONTAMINATION AT THE SITE, WAS ISSUED NOVEMBER 21, 1988. THE FS, WHICH DEVELOPS AND EXAMINES ALTERNATIVES FOR REMEDIATION OF THE SITE WAS ISSUED IN DRAFT FORM TO THE PUBLIC JANUARY 24, 1989 AND WAS FINALIZED ON MARCH 30, 1989.

THIS RECORD OF DECISION HAS BEEN PREPARED TO SUMMARIZE THE REMEDIAL ALTERNATIVE SELECTION PROCESS AND TO PRESENT THE RECOMMENDED REMEDIAL ALTERNATIVE.

1.1 SITE LOCATION AND DESCRIPTION

THE NEWSOM BROTHERS SITE IS LOCATED IN MARION COUNTY, COLUMBIA, MISSISSIPPI AT COORDINATES 31 DEGREES 14 MINUTES 42 SECONDS NORTH LATITUDE AND 89 DEGREES 49 MINUTES 37 SECONDS WEST LONGITUDE (FIGURE 1-1). THE 81-ACRE SITE IS BORDERED ON THE NORTH BY RESIDENCES ALONG BULLIS, WADE, AND PEARL STREETS, AND ON THE EAST BY RESIDENCES ALONG CHINABERRY AND PARK AVENUES. THE ILLINOIS CENTRAL GULF RAILROAD PARALLELS MOST OF THE SITE'S SOUTHWESTERN BORDER. FURTHER TO THE SOUTHWEST, ACROSS THE RAILROAD, LIES A MODERATELY DEVELOPED COMMERCIAL AREA. SCATTERED RESIDENCES ARE ALSO LOCATED TO THE SOUTH. A CHAIN-LINK FENCE SURROUNDS THE ENTIRE FACILITY.

THE SITE'S MAIN PROCESSING FACILITIES WERE LOCATED IN THE WEST-CENTRAL PORTION OF THE SITE (FIGURE 1-2). OF SIGNIFICANCE ARE AN EXTENSIVE SYSTEM OF CONCRETE DRAINS THAT APPARENTLY SERVED TO COLLECT AND DRAIN SPILLED WASTES AND RAINWATER, TWO 100,000-GALLON STORAGE TANKS WHICH REPORTEDLY CONTAINED DIESEL OIL, SEVERAL SMALLER TANKS AND BOILERS, ONE INCINERATOR, AND ONE BOILER BUILDING USED TO HEAT "DOWTHERM." THE EXTENT OF THE AREA OF RUNOFF (OLD PROCESSING AREA IN FIGURE 1-2) DRAINED BY THE CONCRETE DRAINAGE SYSTEM IS APPROXIMATELY 300,000 FT².

NORTH OF THE PROCESSING AREA IS A 20-ACRE FIELD SPARSELY COVERED WITH SHORT GRASS. THE SOUTHEAST QUADRANT OF THE SITE CONTAINS THREE PONDS (NORTH,EAST AND HORSESHOE), A PECAN ORCHARD, AND THE REMNANTS OF A WOOD CHIP PILE. A FOURTH POND LOCATED IN THE EXTREME SOUTH END OF THE SITE WAS FILLED IN 1984 DURING AN EPA EMERGENCY RESPONSE ACTION.

SEVERAL AREAS OF BURIED MATERIAL WERE IDENTIFIED DURING THE REMEDIAL INVESTIGATION OF THE SITE. BURIED DRUMS WERE FOUND IN THE NORTH POND AND PECAN ORCHARD AREAS. EPA RETURNED TO THE SITE IN NOVEMBER 1987 TO REMOVE THESE DRUMS. DURING THIS REMOVAL ACTION, ADDITIONAL AREAS OF BURIED MATERIALS WERE DISCOVERED AND INVESTIGATED THROUGH ADDITIONAL FIELD WORK.

1.2 SITE HISTORY

FROM THE EARLY 1930S UNTIL 1943, JJ WHITE LUMBER COMPANY OPERATED A SAWMILL ON THE NEWSOM BROTHERS SITE. THE SOUTHERN NAVAL STORES COMPANY, LIMITED CONCURRENTLY RAN AN OPERATION CALLED NAVAL STORES ON VARIOUS PARCELS OF THE SITE FROM 1936 TO 1951. NAVAL STORES PRODUCED WOOD DERIVATIVES SUCH AS RESIN, TURPENTINE, PINE OIL, AND TALL OIL. THIS COMPANY APPEARS TO HAVE BEEN OWNED AND OPERATED BY SEVERAL PEOPLE, BUT THE PLANT CONSISTENTLY PRODUCED THE SAME WOOD-DERIVED PRODUCTS. FROM THE 1950S UNTIL 1965, THE SITE WAS OWNED AND OPERATED BY LEACH BROTHERS INC. AND THE OPERATION BECAME KNOWN AS SOUTHERN NAVAL STORES, DIVISION OF LEACH BROTHERS, INC. REASOR CHEMICAL CORPORATION OWNED THE SITE FROM 1965 TO 1972, AND CHEM-PRO INTERNATIONAL INC. OWNED IT FROM 1972 TO 1974.

SOUTHERN NAVAL STORES COMPANY, LIMITED, REASOR CHEMICAL CORPORATION, AND CHEM-PRO INTERNATIONAL, INC. RAN SIMILAR PRODUCTION PROCESSES. THESE INVOLVED GRINDING PINE STUMPS AND DIGESTING THEM WITH A BOILING LIQUOR OF SODIUM HYDROXIDE AND SODIUM SULFITE. THE PRODUCTS WERE TALL OILS, WHICH ARE 35 TO 40 PERCENT RESIN AND 50 TO 60 PERCENT FATTY ACIDS. TURPENTINE WAS ALSO EXTRACTED FROM THE PINE STUMPS USING NAPHTHA. IN ADDITION, REASOR CHEMICAL CORPORATION SPECIFICALLY MANUFACTURED CALCIUM AND ZINC RESINATES, POLYMERIZED RESIN, AND RUBBER RESINS.

IN JANUARY 1975, REICHOLD CHEMICALS, INC. (REICHOLD) TOOK OVER OWNERSHIP AND OPERATIONS AT THE SITE. DETAILS OF OPERATIONS ARE SKETCHY, BUT PENTACHLOROPHENOL (PCP) WAS APPARENTLY MIXED WITH DIESEL OIL AND SOLD. THE PCP AND DIESEL OIL WERE MIXED AND HEATED USING DOWTHERM AS A HEAT TRANSFER MEDIUM. IN OTHER OPERATIONS, BORON TRIFLUORIDE WAS MIXED WITH PHENOL AND DI-ISOBUTYLENE TO FORM OCTAL PHENOL RESIN. XYLENES WERE ALSO USED IN NUMBER OF PROCESSES. AN UNLINED HORSESHOE SHAPED POND WAS USED FOR COOLING THE PROCESS DISCHARGE.

IN APRIL 1976, BEFORE REICHOLD CHEMICALS ABANDONED OPERATIONS AT THE SITE, THE MISSISSIPPI AIR AND WATER POLLUTION CONTROL COMMISSION INVESTIGATED A REPORTED FISH KILL IN A SMALL CREEK DOWNSTREAM FROM THE REICHOLD CHEMICALS FACILITY. THROUGH THE INVESTIGATION, THE STATE COMMISSION DISCOVERED THAT THE COMPANY HAD NO DISCHARGE PERMIT YET WAS DISCHARGING WASTEWATER CONTAINING PHENOLS, OIL, AND GREASE INTO A NEARBY STREAM.

REICHOLD CHEMICALS CONTINUED OPERATIONS AT THE PROPERTY UNTIL MARCH 1977, WHEN AN EXPLOSION AND FIRE IN ONE OF THE BOILER UNITS DESTROYED MOST OF THE PROCESSING FACILITY. THE COMPANY SUBSEQUENTLY ABANDONED THE SITE. EMPLOYEES OF THE GEORGE BYRD BULLDOZER COMPANY HAVE FILED DEPOSITIONS REPORTING THAT THEY USED EARTH MOVING EQUIPMENT TO DIG LARGE HOLES IN WHICH REICHOLD CHEMICALS PERSONNEL BURIED MANY DRUMS. IN THEIR DEPOSITION THE BULLDOZER COMPANY EMPLOYEES REPORTED THAT THIS BURIAL TOOK PLACE IN FIVE SEPARATE AREAS ON THE NEWSOM BROTHERS SITE. A GEOPHYSICAL SURVEY CONDUCTED BY CDM, NOVEMBER 1986 THROUGH JANUARY 1987, LOCATED TWO BURIAL SITES.

IN 1980 AND 1981, OWNERSHIP OF THE 81-ACRE SITE TRANSFERRED TO R. R. NEWSOM, SR. AND R. R. NEWSOM, JR. (OWNERS OF THE NEW-CROS CONSTRUCTION) COMPANY AND MR. WILLIAM EARL STOGNER (OWNER OF STOGNER TRUCKING COMPANY). THE NEWSOMS' OWNED A TOTAL OF 49 ACRES AND MR. STOGNER OWNED 32 ACRES OF THE SITE PROPERTY. BOTH STOGNER AND THE NEWSOMS HAD BUILDINGS ON THE PROPERTY FROM WHICH THEY OPERATED THEIR RESPECTIVE TRUCKING AND CONSTRUCTION BUSINESSES. A FURNITURE SHOP CURRENTLY RENTS AND OPERATES FROM ONE OF THE BUILDINGS OWNED BY MR. STOGNER. ONLY A FEW OF THE ORIGINAL REICHOLD CHEMICALS BUILDINGS CURRENTLY REMAIN ON THE PROPERTY; SOME WERE DESTROYED IN THE MARCH 1977 EXPLOSION AND FIRE AND OTHERS DISMANTLED BY REICHOLD UPON LEAVING THE SITE.

IN NOVEMBER 1988 MR. STOGNER AND THE NEWSOMS WERE AWARDED DAMAGES AS A RESULT OF A LAWSUIT AGAINST FILED REICHOLD CHEMICALS. REICHOLD CHEMICALS REASSUMED OWNERSHIP OF THE PROPERTY AT THAT TIME.

1.3 SITE ACTIVITIES

IN JANUARY 1984, THE MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES (MDNR) BUREAU OF POLLUTION CONTROL (BPC) RECEIVED A LETTER FROM AN AREA RESIDENT WHO IS A FORMER FEDERAL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION INSPECTOR. IN HIS LETTER, THE FORMER INSPECTOR WARNED OF POSSIBLE CONTAMINATION TO THE COLUMBIA CITY WATER SUPPLY SYSTEM (CONSISTING OF FOUR GROUNDWATER WELLS ABOUT 1,200 FEET NORTHEAST OF THE SITE) HE FELT WAS RESULTING FROM POLLUTION AT THE NEWSOM BROTHERS SITE.

IN FEBRUARY 1984, BPC SAMPLED TWO OF THE CITY'S WATER SUPPLY WELLS, THE CITY WATER DISTRIBUTION SYSTEM, AND SEVERAL LOCATIONS AT THE NEWSOM BROTHERS SITE (INCLUDING SLUDGE FROM THE OLD PLANT SUMP, WATER FROM THE OLD TREATMENT POND, SOIL IN A DRUM DISPOSAL AREA, AND ONSITE WELL WATER). CONCURRENT WITH THE BPC STUDY, EPA'S ENVIRONMENTAL SERVICES DIVISION (ESD) ALSO SAMPLED THE CITY WATER SUPPLY WELLS. EPA AND BPC DETECTED LOW LEVELS OF SEVERAL VOLATILE ORGANIC CHEMICALS, INCLUDING BENZENE, ACETONE, METHYL ETHYL KETONE, AND CHLOROFORM IN THE CITY WATER SUPPLY WELLS. ALTHOUGH THE CITY WELLS SUPPLY WATER TO ALMOST ALL COLUMBIA RESIDENTS, EPA WAS ABLE TO LOCATE 13 PRIVATE WELLS IN THE SOUTH COLUMBIA AREA. FOLLOWING ANALYSIS OF THE RESULTS OF THE EPA AND BPC STUDIES, EPA CONDUCTED AN ADDITIONAL SAMPLING INVESTIGATION OF THE SITE TO DETERMINE THE EXTENT

OF THE CONTAMINATION PROBLEM. IN MARCH 1984, EPA'S FIELD INVESTIGATION TEAM (FIT) COLLECTED SAMPLES FROM AREA PRIVATE WELLS, THE COLUMBIA CITY SUPPLY WELLS, AND ONSITE SOILS, SEDIMENTS, STREAMS, AND OTHER PRIVATE WELLS IN THE AREA. BPC'S SAMPLING EFFORTS REVEALED THE PRESENCE OF DIOXINS (NOT THE 2,3,7,8-TETRACHLORODIBENZO-DIOXIN ISOMER) IN THE SOIL AT THE FORMER CHEMICAL PLANT SITE, BUT AT LEVELS THAT THE CENTERS FOR DISEASE CONTROL CONSIDERED NOT TO POSE A HEALTH THREAT TO COMMUNITY RESIDENTS. EPA PERFORMED AN IMMEDIATE REMOVAL ACTION THAT INVOLVED REMOVING OVER 600 SURFACE DRUMS AND PARTIAL DRUMS FROM THE SITE AND DRAINING THE NORTH AND SOUTH PONDS. EPA FILLED THE SOUTH POND WITH CLAY AND GRADED IT.

WHILE EPA'S IMMEDIATE REMOVAL ACTION WAS PROCEEDING, THE MISSISSIPPI BPC RECEIVED REPORTS FROM LOCAL RESIDENTS WHO HAD BECOME ILL AFTER EATING FISH CAUGHT IN THE HORSESHOE POND. AFTER RECEIVING THESE REPORTS, FISH TISSUE SAMPLES WERE COLLECTED BY THE MISSISSIPPI BPC, HOWEVER, NO HAZARDOUS CONSTITUENTS WERE PRESENT. AFTER EPA COMPLETED ITS IMMEDIATE REMOVAL ACTION AND LEFT THE SITE IN APRIL 1984, SEVERAL COLUMBIA RESIDENTS REPORTED TO THE BPC THAT SOME DRUMS REMAINED AT THE SITE. BPC INVESTIGATED AND ARRANGED FOR THE REMOVAL AND DISPOSAL OF THOSE DRUMS.

BASED ON THREE SETS OF SAMPLES COLLECTED BY THE BPC IN FEBRUARY 1984, THE STATE ATTEMPTED TO LOCATE THE SOURCE OF VOLATILE ORGANIC CONTAMINATION DETECTED IN THE CITY WELLS. A COMPARISON OF THE CONTAMINANTS FOUND IN THE CITY WATER SUPPLY WELLS AND THE POLLUTANTS FOUND ON THE NEWSOM BROTHERS SITE LED THE BPC TO CONCLUDE THAT THE NEWSOM BROTHERS SITE WAS NOT THE SOURCE OF THE WELL CONTAMINATION. THE GROUNDWATER FLOW, WHICH RUNS EAST TO WEST, OR FROM THE DIRECTION OF THE WELLS TOWARD THE SITE, SUPPORTED THE BPC'S TENTATIVE CONCLUSION. FURTHER SAMPLING AND INVESTIGATION IN 1984 LED THE BPC TO BELIEVE THAT THE CITY WELL CONTAMINATION WAS CAUSED BY SEVERAL LEAKING UNDERGROUND GASOLINE STORAGE TANKS NEAR THE WELLS. THE BPC REMOVED SEVERAL TANKS IN 1984 AND TESTED SOIL AND GROUNDWATER NEAR THE TANKS. TEST RESULTS REVEALED THE PRESENCE OF GASOLINE CONSTITUENTS, INCLUDING BENZENE, WHICH WAS THE CONTAMINANT OF GREATEST CONCERN IN THE TWO CONTAMINATED CITYWELLS.

LATER IN 1984, THE NEWSOM BROTHERS SITE WAS PROPOSED BY EPA FOR INCLUSION ON EPA'S NATIONAL PRIORITIES LIST (NPL). IN 1986, EPA FINALIZED THE SITE'S INCLUSION ON THE NPL.

IN 1985, THE BPC INSTALLED NINE MONITOR WELLS IN THE AREA AROUND THE CITY'S WATER TREATMENT PLANT. IN JUNE 1985, THE BPC SAMPLED THOSE WELLS AND FOUND SIGNIFICANT QUANTITIES OF THE SAME CHEMICALS ORIGINALLY FOUND IN THE CITY WATER SUPPLY IN ONLY ONE WELL.

IN EARLY 1986, THE CURRENT PROPERTY OWNERS (R. R. NEWSOM, SR., R. R. NEWSOM, JR., AND WILLIAM EARL STOGNER) FILED A \$100 MILLION FEDERAL LAWSUIT AGAINST REICHOLD CHEMICALS, CLAIMING THAT REICHOLD KNOWINGLY SOLD THEM CONTAMINATED LAND. TO SUPPORT THE SUIT, THE PROPERTY OWNERS HIRED A CHEMICAL TESTING COMPANY TO SAMPLE CHEMICALS FOUND IN BURIED DRUMS AT THE SITE. THE TEST RESULTS REPORTED BY THE CHEMICAL TESTING COMPANY IN THE SUMMER OF 1986 SHOWED THAT THE DRUMS CONTAINED BENZENE, TOLUENE, AND XYLENE, IN ADDITION TO OTHER POLLUTANTS.

ONSITE DRUM BURIAL AREAS IDENTIFIED DURING THE PHASE I RI WERE THE TARGET OF AN EPA REMOVAL ACTION CONDUCTED FROM NOVEMBER 2, 1987 THROUGH FEBRUARY 7, 1988. THE ROY F. WESTON, INC. TECHNICAL ASSISTANCE TEAM (TAT) PERFORMED THE REMOVAL UNDER CONTRACT WITH EPA. DURING THE REMOVAL ACTION, APPROXIMATELY 3,900 DRUMS WERE EXCAVATED AND SHREDDED. FOUR MAJOR AREAS OF DRUM BURIAL AND AN ADDITIONAL NUMBER OF SMALLER DRUM BURIAL PITS WERE IDENTIFIED THROUGH THE GEOPHYSICAL SURVEYS PERFORMED BY TAT DURING THE REMOVAL ACTION.

AN ESTIMATED 1,640 TONS OF CONTAMINATED SOIL WERE REMOVED FROM THE NORTH POND AREA AND 280 TONS OF SOIL REMOVED FROM THE WOOD CHIP AREA. DURING THE REMOVAL OF DRUMS FROM THE NORTH POND AREA, APPROXIMATELY 775 NEARBY RESIDENTS WERE RELOCATED FOR TWO DAYS TO ENTIRELY ELIMINATE ANY POTENTIAL HAZARD ASSOCIATED WITH THE REMOVAL ACTION. THE DRUMS WERE MOVED TO A CENTRAL AREA OF THE SITE IN THE VICINITY OF THE WOOD CHIP AREA AND SHREDDED. THE WASTES CONTAINED IN THE DRUMS WERE DISPOSED IN BULK FORM AT A HAZARDOUS WASTE LANDFILL IN EMELLE, ALABAMA. SEVERAL OTHER AREAS CONTAINING BURIED MATERIALS WERE IDENTIFIED ONSITE, INCLUDING TWO STEEL TANKS IN THE NORTH FIELD, CHEMICAL BURIAL AREAS IN THE NORTH FIELD, PECAN ORCHARD, AND WOOD CHIP AREAS, AND TRASH DISPOSAL AREAS IN THE WOOD CHIP AREA.

2.0 ENFORCEMENT ANALYSIS

THE NEWSOM BROTHERS/REICHOLD CHEMICALS SITE WAS PLACED ON THE NPL IN JUNE 1986. EPA DETERMINED THAT SOUTHERN NAVAL STORES, INC., LEACH BROTHERS, INC., REASOR CHEMICALS CO., REICHOLD CHEMICAL CO., R.R. NEWSOM AND W.E. STOGNER WERE POTENTIALLY RESPONSIBLE PARTIES (PRP) FOR THE CONTAMINATION OF THE SITE. THE PRP'S WERE SENT NOTICE LETTERS TO ALLOW THEM THE OPPORTUNITY TO CONDUCT THE SITE RELATED REMEDIAL INVESTIGATIONS AND FEASIBILITY STUDIES (RI/FS). SINCE ALL PRP'S DECLINED TO PARTICIPATE EPA ASSUMED LEAD RESPONSIBILITY FOR THE SITE. WITH THE RECENT COMPLETION OF RI/FS ACTIVITIES AT THE SITE EPA HAS BEGUN NEGOTIATIONS WITH REICHOLD CHEMICALS ON A CONSENT DECREE FOR A REMEDIAL DESIGN/REMEDIAL ACTION (RD/RA) FOR THE SITE. IF AGREEMENT CAN BE REACHED, THE CONSENT DECREE WILL BE SIGNED BY THE PARTICIPANTS SHORTLY AFTER APPROVAL OF THIS RECORD OF DECISION AND WILL BE SUBMITTED TO THE APPROPRIATE FEDERAL DISTRICT COURT FOR ENTRY.

ADDITIONALLY, EPA AND THE DEPARTMENT OF JUSTICE HAVE ENTERED INTO SETTLEMENT NEGOTIATIONS WITH REICHOLD CHEMICALS FOR RECOVERY OF SITE RELATED COSTS INCURRED BY EPA. REICHOLD HAS SUBMITTED A PAYMENT OF \$1 MILLION TO EPA FOR PARTIAL REIMBURSEMENT OF EXPENSES INCURRED TO DATE. NOTICE LETTERS WILL BE SENT TO ALL IDENTIFIED PRP'S TO ALLOW THEM THE OPPORTUNITY TO PARTICIPATE IN THE RD/RA STAGE OF THE CLEANUP.

3.0 CURRENT SITE STATUS

3.1 HYDROGEOLOGIC SETTING

THE NEWSOM BROTHERS SITE IS LOCATED OVER THE PEARL RIVER ALLUVIUM, WITHIN THE COASTAL PLAIN PROVINCE OF MISSISSIPPI, A THICK BLANKET OF SOUTHWESTWARD SLOPING SEDIMENTS. IN MARION COUNTY, THE SEDIMENTS ARE GREATER THAN 30,000 FEET THICK. NEAR THE BASE OF THE SEDIMENTS, A THICK DEPOSIT OF SALT (THE LOUANN SALT) IS PRESENT, AND IN PLACES HAS FORMED UPWARD PIERCING DIAPYRS. THESE SALT DOMES HAVE BEEN THE TARGET OF OIL AND GAS EXPLORATION THROUGHOUT SOUTHERN MISSISSIPPI. ABOVE THE SALT BED IS A VARYING SEQUENCE OF SANDSTONES, SHALES, CLAYS AND LIMESTONES, THAT EXTENDS UPWARD TO THE SURFACE.

THE OCCURRENCE OF FRESH GROUNDWATER IN MARION COUNTY IS LIMITED TO THE UPPER 1,500 FEET. BELOW THIS DEPTH THE WATER IS SALINE. THE MAJOR AQUIFERS WITHIN THE FRESH WATER ZONE OCCUR WITHIN MIOCENE AND YOUNGER SEDIMENTS.

THE COLUMBIA WATER SUPPLY WELLS PRODUCE GROUNDWATER FROM THE ALLUVIAL AQUIFER ASSOCIATED WITH THE PEARL RIVER. ACCORDING TO THE ELECTRIC LOGS OF TWO OF THE CITY SUPPLY WELLS, THE ALLUVIAL DEPOSIT IS APPROXIMATELY 146 FEET THICK, AND IS UNDERLAIN BY CLAY, PROBABLY OF THE GRAHAM FERRY AND/OR PASCAGOULA FORMATION (FIGURE 3-1). ONE OF THE CITY WELLS, LOCATED 1,200 FEET EAST OF THE SITE, ENCOUNTERED 100 FEET OF CLAY PRIOR TO TERMINATION. THE WELL DID NOT COMPLETELY PENETRATE THE CLAY LAYER. TWO ELECTRIC LOGS OF THE NEARBY FOXWORTH COMMUNITY WATER SUPPLY WELLS SHOW THE CLAY UNDERLYING THE ALLUVIAL AQUIFER TO BE ABOUT 200 FEET THICK. THEREFORE, ON THE BASIS OF THESE LIMITED DATA, THE CLAY APPEARS TO BE Laterally consistent, and is believed to confine and protect the underlying MIOCENE AQUIFER SYSTEM.

SINCE THE COLUMBIA CITY WELL FIELD IS LOCATED APPROXIMATELY 1,200 FEET TO THE NORTHEAST OF THE SITE A SERIES OF AQUIFER PERFORMANCE TESTS WERE PERFORMED TO DETERMINE IF GROUNDWATER FROM BENEATH THE NEWSOM BROTHERS SITE COULD BE DRAWN INTO THE CITY WELLS. THE TESTS SHOWED THAT THE GROUNDWATER BENEATH THE SITE FLOWS TO THE WEST AND AWAY FROM THE CITY WELLS AND WOULD NOT BE DRAWN BACK INTO THE CITY WELLS UNDER THE WORST CASE SCENARIO.

3.2 GROUNDWATER

A TOTAL OF 34 MONITORING WELLS WERE INSTALLED ON AND OFF OF THE (FIGURE 3-2) TO SAMPLE GROUNDWATER IN THE SHALLOW AND DEEP ZONES OF THE ALLUVIAL AQUIFER. SOME ORGANIC COMPOUNDS WERE DETECTED IN SAMPLES FROM A FEW OF THE WELLS; HOWEVER, MOST WERE DETECTED AT LOW ESTIMATED CONCENTRATIONS NEAR DETECTION LIMITS. NO CONTAMINANT PLUME WAS IDENTIFIED.

BOTH TEMPORARY AND PERMANENT GROUNDWATER MONITOR WELLS WERE INSTALLED DURING THE PHASE I RI AT THE NEWSOM BROTHERS SITE. SAMPLING CONDUCTED AT THE PERMANENT MONITOR WELLS SHOWED THAT NO CHEMICALS WERE DETECTED ABOVE NATIONAL PRIMARY DRINKING WATER STANDARDS. ONE ONSITE TEMPORARY

MONITOR WELL CONTAINED CONCENTRATIONS OF TOLUENE WHICH EXCEEDED THE PROPOSED MAXIMUM CONCENTRATION LEVEL GOALS (MCLGS). DUE TO THE OBSERVATIONS IN THIS TEMPORARY MONITOR WELL, SUBSTANTIAL ADDITIONAL GROUNDWATER MONITOR WELL INSTALLATIONS WERE PROPOSED FOR THE SITE DURING THE PHASE II RI.

SAMPLING AND ANALYSIS OF THE NEW PERMANENT GROUNDWATER MONITOR WELLS INSTALLED DURING THE PHASE II RI SHOWED CONCENTRATIONS OF ORGANIC CHEMICALS IN 3 OF 27 SAMPLED WELLS. THE ORGANICS DETECTED WERE BENZENE, ETHYL BENZENE, 1,1,1-TRICHLOROETHANE, DI-N-BUTYLPHTHALATE, TRIMETHYLBICYCLOHEPTANONE, AND BIS(2-ETHYL HEXYL)PHTHALATE. EPA CONTRACT LABORATORY PROGRAM (CLP) ANALYSES DETECTED BENZENE IN MONITOR WELLS MW-01(5 UG/L) AND MW-17 (1 UG/L-ESTIMATED); ETHYLBENZENE (1 UG/L-ESTIMATED), 1,1,1-TRICHLOROETHANE (3 UG/L-ESTIMATED), D-N-BUTYL PHTHALATE (3 UG/L-ESTIMATED), AND TRIMETHYLBICYCLOHEPTANONE (700 UG/L ESTIMATED) WERE ALSO DETECTED IN MW-17. BIS(2-ETHYLHEXYL) PHTHALATE (A COMMON LABORATORY CONTAMINANT) WAS DETECTED IN MW-01. A FEW OTHER MISCELLANEOUS ORGANIC COMPOUNDS WERE TENTATIVELY DETECTED AT LOW ESTIMATED VALUES.

THE INORGANIC CHEMICALS DETECTED ABOVE BACKGROUND LEVELS DURING SAMPLING OF THE NEW WELLS WERE ALUMINUM, BARIUM, BERYLLIUM, CALCIUM, COPPER, IRON, LEAD, MAGNESIUM, MANGANESE, MERCURY, SELENIUM, SODIUM, AND VANADIUM. LEAD WAS THE ONLY INORGANIC CONTAMINANT DETECTED ABOVE MCLS. LEAD WAS DETECTED IN THREE MONITORING WELLS (MW-19 (120 UG/L), MW-23 (84 UG/L) AND MW-27 (160 UG/L). HOWEVER, SINCE THE SAMPLING OF DRILLING MUDS USED DURING WELL INSTALLATION REVEALED ELEVATED LEAD LEVELS, LEAD DETECTED IN WELL SAMPLES IS NOT CONSIDERED TO BE AN INDICATION OF LEAD CONTAMINATION IN GROUNDWATER BUT IS A RESULT OF RESIDUAL LEAD CONTRIBUTED BY THE DRILLING MUDS.

3.3 SURFACE WATER

THE PREDOMINANT SURFACE WATER FEATURE IN PROXIMITY TO THE SITE IS THE PEARL RIVER. THE PEARL RIVER AND ITS TRIBUTARIES DRAIN ABOUT 6,630 SQUARE MILES OF CENTRAL AND SOUTHERN MISSISSIPPI. THE RIVER FLOWS NORTH TO SOUTH ALONG THE WEST SIDE OF THE CITY OF COLUMBIA AND EMPTIES INTO THE GULF OF MEXICO NEAR BOGALUSA, LOUISIANA. FROM 1938 TO 1968, THE AVERAGE DISCHARGE OF THE PEARL RIVER WAS APPROXIMATELY 8,693 CUBIC FEET PER SECOND (CFS). SOME FLOODING IS COMMON, PARTLY DUE TO THE RELATIVELY FLAT AND LOW-LYING ALLUVIAL PLAINS. ON APRIL 9, 1938, THE RIVER DISCHARGE REACHED 72,600 CFS. DURING FLOODING EVENTS, LARGE PORTIONS OF THE SITE MAY BE UNDERWATER FOR AN EXTENDED PERIOD OF TIME. FLOODING OCCURS DUE TO RISING WATER LEVELS IN NEARBY LOW AREAS AND OVERFLOWING OF LOCAL STREAMS.

SURFACE WATER WAS SAMPLED BOTH ONSITE (CONCRETE DRAINAGE SYSTEM AND ONSITE PONDS) AND OFFSITE (UNNAMED TRIBUTARY AND JINGLING CREEK) DURING THE PHASE I RI. MERCURY DETECTED AT BOTH ONSITE AND OFFSITE LOCATIONS, WAS THE ONLY CONTAMINANT EXCEEDING THE MISSISSIPPI AMBIENT WATER QUALITY CRITERIA (MAWQC) OF 0.2 UG/L. HOWEVER, ONLY ONE SAMPLING POINT, IN JINGLING CREEK, CONTAINED MERCURY AT A CONCENTRATION (2.3 UG/L) EXCEEDING THE 2 UG/L. ALL OTHER DETECTED MERCURY VALUES RANGED FROM 0.1 UG/L TO 0.5 UG/L, AND ALL VALUES WERE REPORTED AS ESTIMATED AND WITH ONLY PRESUMPTIVE EVIDENCE OF THE MATERIAL. THEREFORE, NO CLEAR INDICATION OF SURFACE WATER CONTAMINATION COULD BE DRAWN FROM THESE SAMPLES.

3.4 SEDIMENT

INDICATOR CHEMICALS WERE IDENTIFIED IN THE PHASE I RI DURING SAMPLING OF ONSITE SEDIMENTS. COPPER, PHENOLS, ETHYL BENZENE AND TOTAL XYLENES WERE DETECTED IN SEDIMENT SAMPLES COLLECTED FROM THE CONCRETE DRAINAGE SYSTEM. SEDIMENT IN THE NORTH POND, THE DRAINAGE DITCH IMMEDIATELY UPGRADIENT FROM THE NORTH POND, AND THE EAST POND CONTAINED ELEVATED LEVELS OF A VARIETY OF ORGANIC CHEMICALS. THE NORTH AND EAST PONDS WERE SAMPLED AGAIN DURING THE PHASE II RI TO CONFIRM THE RESULTS OF PHASE I. SEDIMENT SAMPLES COLLECTED FROM JINGLING CREEK UPSTREAM AND DOWNSTREAM FROM THE SITE DID NOT CONTAIN DETECTABLE LEVELS OF CONTAMINANTS OF CONCERN. RESULTS OF SEDIMENT SAMPLING ARE PRESENTED IN TABLE 3-1.

3.5 SOIL

OVER 300 SOIL SAMPLES HAVE BEEN COLLECTED AT VARIOUS DEPTHS ACROSS THE SITE (FIGURE 3.3). THE SAMPLES WERE COLLECTED AT ONE FOOT, FIVE FEET, AND SOME AT 10 FEET. A VARIETY OF SOIL

CONTAMINANTS WERE DETECTED AT SCATTERED LOCATIONS AT THE SITE DURING THE PHASE I RI, CONDUCTED IN LATE 1986 TO EARLY 1987. THE INORGANIC CHEMICALS MOST FREQUENTLY DETECTED IN THE SOIL WERE BERYLLIUM, COBALT, AND NICKEL. THE ORGANIC CHEMICALS FREQUENTLY DETECTED WERE, XYLENES, AROCHLOR 1254 AND POLYCYCLIC AROMATIC HYDROCARBONS (PAHS). BASED ON THESE RESULTS, A SOIL SAMPLING AND ANALYSIS PROGRAM WAS INCLUDED IN THE PHASE II RI CONDUCTED IN 1988.

SOIL SAMPLING AT THE NEWSOM BROTHERS SITE DURING THE PHASE II RI INDICATED A WIDE VARIETY OF ORGANIC AND INORGANIC CHEMICALS PRESENT AT VARIOUS AREAS OF THE SITE. THESE CHEMICALS WERE GENERALLY FOUND IN ISOLATED SAMPLES, RATHER THAN AT CONSISTENT LOCATIONS THROUGHOUT THE SITE. THE MAJOR ORGANIC CHEMICALS DETECTED IN SOILS WERE TOLUENE, ETHYL BENZENE, PHENOL, PENTACHLOROPHENOL, AND XYLENES. THE MAJOR INORGANIC CHEMICALS WERE BARIUM, CHROMIUM, COPPER, NICKEL, AND VANADIUM. THE FREQUENCY OF DETECTION AND CONCENTRATIONS OF CHEMICALS OF CONCERN IN SOIL SAMPLES COLLECTED AT THE SITE ARE PRESENTED IN TABLE 3.2

3.6 HAZARDOUS SUBSTANCES

HAZARDOUS SUBSTANCES WERE IDENTIFIED ONSITE AND SAMPLED DURING THE RI. MATERIALS OBSERVED IN DRUMS AND ONSITE STORAGE TANKS WERE REMOVED DURING THE EPA EXPEDITED REMOVAL ACTION. THE ESTIMATED 650 CUBIC YARDS OF BULK HAZARDOUS SUBSTANCES REMAINING ONSITE CONSISTS OF BLACK TAR-LIKE WASTE MATERIAL AND A RESIN MATERIAL WHICH IS FOUND IN THREE LOCATIONS ONSITE AND IN THE CONCRETE DRAINAGE SYSTEM (FIGURE 3-4). THIS MATERIAL WAS SAMPLED BOTH DURING THE PHASE I AND PHASE II RI AND WAS FOUND TO CONTAIN HIGH LEVELS OF A VARIETY OF ORGANIC COMPOUNDS. THE CONCENTRATIONS OF CHEMICALS FOUND IN THE DRUMMED MATERIAL AND WASTE MATERIAL IS LISTED IN TABLES 3-3 AND 3-4.

3.7 SITE RISK /ENDANGERMENT ASSESSMENT

AN ENDANGERMENT ASSESSMENT (EA) WAS PERFORMED FOR THE NEWSOM BROTHERS SITE TO EVALUATE POTENTIAL IMPACTS ON HUMAN HEALTH AND THE ENVIRONMENT IN THE ABSENCE OF FURTHER REMEDIAL ACTION. THE ANALYTICAL RESULTS OF THE SAMPLES COLLECTED FROM THE VARIOUS MEDIA AT THE SITE WERE REVIEWED TO DETERMINE WHICH OF THE CHEMICALS DETECTED ARE POTENTIALLY SITE RELATED AND OF POTENTIAL CONCERN AT THE SITE. CHEMICALS DETECTED FREQUENTLY AND PRESENT AT CONCENTRATIONS ABOVE THOSE CONSIDERED TO OCCUR NATURALLY (BACKGROUND) WERE CHOSEN AS CHEMICALS OF POTENTIAL CONCERN FOR THE SITE AND WERE ASSESSED FOR OVERALL THREAT TO HUMAN HEALTH AND THE ENVIRONMENT. THESE CHEMICALS ARE LISTED IN TABLE 3-5.

3.7.1 HUMAN EXPOSURE PATHWAYS

POTENTIAL PATHWAYS BY WHICH HUMAN POPULATIONS COULD BE EXPOSED TO CHEMICALS OF POTENTIAL CONCERN CURRENTLY AND IN THE FUTURE WERE IDENTIFIED AND SELECTED FOR EVALUATION. IDENTIFICATION AND SELECTION OF PATHWAYS WAS BASED PRIMARILY ON CONSIDERATIONS OF CHEMICAL MIGRATION AND CURRENT OR HYPOTHETICAL FUTURE LAND USE CONDITIONS OF THE SITE AND SURROUNDING AREA. THE EXPOSURE PATHWAYS SELECTED FOR EVALUATION UNDER CURRENT LAND USE CONDITIONS ARE THE FOLLOWING:

- DIRECT CONTACT (INCIDENTAL INGESTION AND DERMAL ABSORPTION) WITH CONTAMINATED SOIL BY WORKERS AND TRESPASSERS (CHILDREN) AT THE SITE;
- INHALATION BY ON-SITE WORKERS AND RESIDENTS BORDERING THE SITE, OF VAPORS EMITTED FROM THE SOIL
- DIRECT CONTACT WITH WASTES (INCIDENTAL INGESTION AND DERMAL ABSORPTION) BY WORKERS AND TRESPASSERS (CHILDREN) ONSITE;
- DIRECT CONTACT WITH POND SEDIMENTS (DERMAL ABSORPTION ONLY) BY TRESPASSERS WHILE WADING.

THE ABOVE-MENTIONED POTENTIAL EXPOSURE PATHWAYS WOULD ALSO APPLY IN THE FUTURE. ADDITIONAL HYPOTHETICAL HUMAN EXPOSURE PATHWAYS THAT WERE SELECTED FOR EVALUATION AND MAY BE RELEVANT FOR THE FUTURE IF THE SITE WERE DEVELOPED FOR RESIDENTIAL USE OR IF GROUNDWATER FROM THE ALLUVIAL AQUIFER AT THE SITE WERE USED FOR DRINKING, ARE THE FOLLOWING:

- DIRECT CONTACT BY FUTURE RESIDENTS OF THE SITE, WITH WASTES, SOILS, AND POND SEDIMENTS PLACED ON THE GROUND SURFACE (INCIDENTAL INGESTION AND DERMAL ABSORPTION); AND
- INGESTION OF GROUNDWATER FROM THE ALLUVIAL AQUIFER BY FUTURE ONSITE RESIDENTS.

3.7.2 HUMAN HEALTH RISK ASSESSMENT

RISKS FROM THE EXPOSURES IDENTIFIED ABOVE WERE EVALUATED FIRST BY COMPARING CONCENTRATIONS OF CHEMICALS OF POTENTIAL CONCERN AT POINTS OF POTENTIAL EXPOSURE WITH ARARS. ARARS ARE NOT AVAILABLE FOR ALL CHEMICALS IN ALL MEDIA AND THEREFORE RISKS WERE QUANTITATIVELY ASSESSED FOR HUMAN EXPOSURES TO THESE CHEMICALS OF POTENTIAL CONCERN AT THE SITE. QUANTITATIVE RISK ASSESSMENT INVOLVES ESTIMATING CHRONIC DAILY INTAKES (CDIS) BY POTENTIALLY EXPOSED POPULATIONS BASED ON THE ASSUMED EXPOSURE SCENARIO. CHRONIC DAILY INTAKES ARE EXPRESSED AS THE AMOUNT OF A SUBSTANCE TAKEN INTO THE BODY PER UNIT BODY WEIGHT PER UNIT TIME, OR MG/KG BW/DAY. A CDI IS AVERAGED OVER A LIFETIME FOR A CARCINOGEN AND OVER THE PERIOD OF EXPOSURE FOR A NONCARCINOGEN. THESE INTAKES ARE THEN COMBINED WITH REFERENCE DOSES (RFDs) OR CANCER POTENCY FACTORS TO DERIVE ESTIMATES OF NONCARCINOGENIC HAZARD OR EXCESS LIFETIME CANCER RISKS, RESPECTIVELY, TO THE POTENTIALLY EXPOSED POPULATIONS. FOR NONCARCINOGENS, RESULTS ARE PRESENTED AS THE RATIO OF THE INTAKE OF EACH CHEMICAL TO ITS RFD, AND AS THE HAZARD INDEX, WHICH IS THE SUM OF THE RATIOS OF THE INTAKE OF EACH CHEMICAL TO ITS RFD. A HAZARD INDEX EXCEEDING ONE INDICATES THAT A HEALTH HAZARD MIGHT RESULT FROM SUCH EXPOSURES. FOR CARCINOGENS THE EXCESS LIFETIME CANCER RISK WAS ESTIMATED. EPA RECOMMENDS THAT THE TOTAL CARCINOGENIC RISK TO INDIVIDUALS RESULTING FROM EXPOSURE AT A SUPERFUND SITE BE REDUCED TO ZERO WHERE POSSIBLE. HOWEVER, ACCORDING TO AGENCY POLICY, THE TARGET TOTAL INDIVIDUAL CARCINOGENIC RISK RESULTING FROM EXPOSURES MAY RANGE BETWEEN 10^{-4} TO 10^{-7} (I.E., ONE EXCESS CANCER IN EVERY 10,000 TO 10,000,000 INDIVIDUALS EXPOSED THROUGHOUT THEIR LIFETIME).

ARARS WERE AVAILABLE ONLY FOR CERTAIN CHEMICALS IN GROUNDWATER. ONLY MAXIMUM CONCENTRATIONS OF LEAD EXCEED THE MCL OF 0.05 MG/L. IT SHOULD BE NOTED, HOWEVER, THAT LEAD WAS ALSO DETECTED IN WATER SAMPLES COLLECTED FROM SAMPLING/DRILLING EQUIPMENT AND MAY BE MORE INDICATIVE OF EQUIPMENT CONTAMINATION THAN GROUNDWATER CONTAMINATION. ALTHOUGH NO STANDARDS OR CRITERIA WERE IDENTIFIED FOR CHEMICALS IN SOILS OR SEDIMENTS, GUIDANCE LEVELS FOR PCDDs/PCDFs AND PCBs (WHICH ALTHOUGH NOT STANDARDS OR CRITERIA, MAY BE CONSIDERED RELEVANT AND APPROPRIATE REQUIREMENTS), WERE IDENTIFIED. THE TOXICITY EQUIVALENT (I.E., EQUIVALENT TO THE CARCINOGENIC TOXICITY OF 2, 3, 7, 8-TCDD) CONCENTRATION OF PCDDs/PCDFs DETECTED IN THE SOILS AT THE SITE WERE BELOW THE CENTERS OF DISEASE CONTROL (CDC) RECOMMENDED LEVEL OF 1 UG/KG FOR RESIDENTIAL AREAS. THE PCB CONCENTRATIONS AT THE SITE (IN THE NORTH POND SEDIMENTS) WERE BELOW THE EPA TSCA GUIDANCE LEVEL OF 10 MG/KG FOR UNRESTRICTED ACCESS AREAS.

3.7.2.1 QUANTITATIVE ESTIMATES OF RISK

BECAUSE ARARS ARE NOT AVAILABLE FOR ALL CHEMICALS IN ALL MEDIA, RISKS ALSO WERE QUANTITATIVELY ASSESSED FOR ALL POTENTIAL EXPOSURE PATHWAYS OUTLINED PREVIOUSLY. THE RESULTS OF THIS ASSESSMENT ARE DISCUSSED BELOW.

3.7.2.1.1 ESTIMATES OF RISKS UNDER CURRENT LAND-USE CONDITIONS

IN THE DIRECT CONTACT WITH CONTAMINATED SURFACE SOIL PATHWAYS, CURRENT EXPOSURE WAS EVALUATED FOR WORKERS IN THE OLD PROCESSING AREA, NORTH FIELD AND IN THE PECAN ORCHARD/WOODCHIP AREA, AND FOR TRESPASSERS (OLDER CHILDREN) IN THESE SITE AREAS. FOR THE EXPOSURE OF WORKERS TO SOILS, AN UPPERBOUND EXCESS CANCER RISK OF APPROXIMATELY 10^{-5} WAS INDICATED UNDER THE CONDITIONS AND ASSUMPTIONS OF THE PLAUSIBLE MAXIMUM SCENARIO, PRIMARILY DUE TO EXPOSURE TO CARCINOGENIC POLYAROMATIC HYDROCARBONS (CPAHS) IN THE OLD PROCESSING AREA. FOR THE EXPOSURE OF TRESPASSING CHILDREN TO SOILS UNDER MAXIMUM CONDITIONS, AN UPPERBOUND EXCESS CANCER RISK OF 10^{-6} WAS ESTIMATED AGAIN DUE TO THE PRESENCE OF CPAHS IN THE OLD PROCESSING AREA. ESTIMATED CANCER RISKS OF PCDD/PCDFs UNDER THESE EXPOSURE SCENARIOS DID NOT SIGNIFICANTLY CONTRIBUTE TO THE TOTAL ESTIMATED UPPERBOUND CANCER RISK ESTIMATES. AVERAGE SCENARIOS FOR EXPOSURE OF BOTH WORKERS AND CHILDREN YIELDED UPPERBOUND CANCER RISKS LESS THAN OR EQUAL TO 10^{-8} . THE HAZARD INDEX WAS GREATER THAN 1 FOR THESE CURRENT SOIL EXPOSURE SCENARIOS ONLY UNDER THE MAXIMUM EXPOSURE

CONDITIONS, WITH THE DOMINANT CHEMICAL OF CONCERN BEING TOTAL PCDD/PCDF. INHALATION OF TOLUENE VOLATILIZING FROM THE SURFACE SOILS RESULTED IN EXPOSURE INTAKES LESS THAN THE RISK REFERENCE DOSE AND THEREFORE ARE NOT LIKELY TO RESULT IN HEALTH EFFECTS TO POTENTIALLY EXPOSED POPULATIONS.

CURRENT EXPOSURE PATHWAYS INVOLVING DIRECT CONTACT WITH WASTES BY TRESPASSERS AND WORKERS DID NOT INVOLVE POTENTIAL CARCINOGENS, AND NONCARCINOGENIC HAZARD INDICES WERE LESS THAN ONE UNDER BOTH AVERAGE AND MAXIMUM EXPOSURE CONDITIONS. IT SHOULD BE NOTED, HOWEVER, THAT DUE TO THE LACK OF QUANTITATIVE TOXICOLOGICAL INFORMATION ON TENTATIVELY IDENTIFIED COMPOUNDS (TICS) FOUND IN THE VARIOUS WASTES ON SITE, THE RISK EVALUATION OF THE WASTES DID NOT CONSIDER THE POTENTIAL HEALTH EFFECTS OF EXPOSURE TO THE TICS BY INDIVIDUALS. TICS AS A MIXTURE MAY AUGMENT THE TOXIC EFFECTS OF EACH CHEMICAL INDIVIDUALLY. THESE TOXIC EFFECTS MAY INCLUDE ADVERSE EFFECTS ON BEHAVIOR, THE CENTRAL NERVOUS SYSTEM, EFFECTS ON GESTATION, OTHER SYSTEMATIC EFFECTS, AND POTENTIAL NEOPLASTIC EFFECTS. TIC AREAS ARE ASSOCIATED WITH THE TAR-LIKE WASTE MATERIAL WHICH WILL BE REMOVED FROM THE SITE.

THE EXPOSURE SCENARIO INVOLVING CHILDREN CURRENTLY WADING IN EITHER NORTH POND, HORSESHOE POND, OR EAST POND AND DERMALLY ABSORBING SEDIMENT CONTAMINANTS YIELDED CARCINOGENIC RISKS OF 10^{-6} ONLY UNDER MAXIMUM EXPOSURE CONDITIONS, PRIMARILY DUE TO CPAHS IN THE EAST POND HORSESHOE POND AND PCBs IN NORTH POND. NONCARCINOGENIC HAZARD INDICES FOR THIS EXPOSURE PATHWAY WERE LESS THAN ONE FOR ALL ON-SITE PONDS.

3.7.2.1.2 ESTIMATES OF RISK UNDER HYPOTHETICAL FUTURE LAND-USE CONDITION

FOR FUTURE LIFETIME RESIDENTIAL EXPOSURES, DIRECT CONTACT WITH SURFACE SOILS, WASTES, AND POND SEDIMENTS SPREAD ON THE SITE SURFACE WERE EVALUATED. CANCER RISKS ESTIMATED USING AVERAGE EXPOSURE CONDITIONS FOR ALL OF THESE FUTURE DIRECT CONTACT PATHWAYS WERE LESS THAN OR EQUAL TO 10^{-7} . FOR DIRECT CONTACT FUTURE PATHWAYS INVOLVING SOILS, ONLY THE MAXIMUM EXPOSURE CONDITIONS YIELDED RISKS ON THE ORDER OF 10^{-5} , PRIMARILY DUE TO THE PRESENCE OF CPAHS IN THE OLD PROCESSING AREA. AVERAGE EXPOSURE CONDITIONS FOR THIS SCENARIO YIELDED CANCER RISKS OF APPROXIMATELY 10^{-8} . FOR DIRECT CONTACT WITH SEDIMENTS, MAXIMUM CANCER RISKS OF 10^{-5} WERE ESTIMATED FOR NORTH POND DUE TO PCBs. THE MAXIMUM CANCER RISK ESTIMATES CALCULATED FOR DIRECT CONTACT WITH SEDIMENTS IN EAST POND AND HORSESHOE POND WERE APPROXIMATELY 10^{-5} , WITH CPAHS AS THE SIGNIFICANT CHEMICALS OF CONCERN. NO CARCINOGENIC CHEMICALS OF CONCERN WERE IDENTIFIED IN THE WASTES. HOWEVER, AS NOTED ABOVE, ALTHOUGH RISKS CANNOT BE QUANTITATIVELY EVALUATED, THE TICS FOUND IN THE WASTES MAY PRODUCE ADVERSE HEALTH IMPACTS ON EXPOSED FUTURE RESIDENTS.

THE ONLY FUTURE DIRECT CONTACT PATHWAY YIELDING A HAZARD INDEX GREATER THAN ONE WAS THE POSSIBLE MAXIMUM SOIL PATHWAY INVOLVING DIRECT CONTACT BY FUTURE LIFETIME RESIDENTS, WITH TOTAL PCDD/PCDFs EVALUATED AS NONCARCINOGENS BEING THE SIGNIFICANT CHEMICALS OF CONCERN. HAZARD INDICES FOR DIRECT CONTACT WITH WASTES OR SEDIMENTS BY FUTURE LIFETIME RESIDENTS UNDER AVERAGE AND MAXIMUM EXPOSURE CONDITIONS WERE LESS THAN ONE.

CONSUMPTION OF GROUNDWATER FROM THE ALLUVIAL AQUIFER FROM BENEATH THE SITE WAS EVALUATED UNDER A POTENTIAL FUTURE USE SCENARIO. CANCER RISKS WERE 10^{-6} AND 10^{-3} UNDER AVERAGE AND MAXIMUM EXPOSURE CONDITIONS, RESPECTIVELY. MAXIMUM LEAD CONCENTRATIONS YIELDED A NONCARCINOGENIC HAZARD INDEX GREATER THAN ONE. IT HAS BEEN DETERMINED HOWEVER, THAT THE LEAD FOUND WAS RESIDUAL CONTAMINATION FROM DRILLING MUDS.

THE GREAT MAJORITY OF THE HUMAN HEALTH EXCESS LIFETIME CANCER RISKS CALCULATED FOR CURRENT AND FUTURE EXPOSURE TO THE CHEMICALS OF CONCERN AT THE NEWSOM BROTHERS SITE DISCUSSED ABOVE ARE WELL WITHIN OR LOWER THAN THE TARGET RISK RANGE OF 10^{-4} TO 10^{-7} THAT EPA HAS USED UNDER SUPERFUND. IT SHOULD BE NOTED THAT PAHS AND PCDD/PCDF COMPOUNDS, DETECTED AT LOW LEVELS PRIMARILY IN THE OLD PROCESSING AREA OF THE SITE, ARE LIKELY TO HAVE BEEN FORMED IN THE EXPLOSION WHICH OCCURRED AT THE SITE. PAHS ARE UBIQUITOUS IN THE ENVIRONMENT AND THE LEVELS OF CPAHS OBSERVED IN THE SITE SOILS ARE WITHIN THEIR RANGE OF URBAN BACKGROUND LEVELS ALTHOUGH ABOVE THOSE LEVELS THOUGHT TO REPRESENT RURAL BACKGROUND. IT SHOULD ALSO BE NOTED THAT MOST OF THE PAHS IN THE OLD PROCESSING AREA AND OTHER SITE STUDY AREAS WERE DETECTED

IN LESS THAN 8% OF THE SAMPLES COLLECTED AND ANALYZED. THIS LOW FREQUENCY OF DETECTION MAY NOT

BE REPRESENTATIVE OF ACTUAL SITE CONDITIONS. FURTHERMORE, THE RISKS ASSOCIATED WITH EXPOSURE TO THE CARCINOGENIC PAHS ARE PROBABLY OVERESTIMATED DUE TO THE APPLICATION OF THE POTENCY FACTOR FOR BENZO(A)PYRENE TO OTHER PAHS WHICH MAY BE LESS POTENT.

TABLE 3.6 SUMMARIZES THE RISKS DETERMINED UNDER THE EXPOSURE PATHWAYS AND CONDITIONS PRESENTED.

3.7.3 ENVIRONMENTAL RECEPTORS

POTENTIAL ENVIRONMENTAL IMPACTS OF THE CHEMICALS OF POTENTIAL CONCERN AT THE NEWSOM BROTHERS SITE ALSO WERE EVALUATED. PLANT AND ANIMAL SPECIES POTENTIALLY EXPOSED TO THE CHEMICALS OF POTENTIAL CONCERN AT THE SITE WERE IDENTIFIED BASED ON A KNOWLEDGE OF THE SITE AND SURROUNDING HABITAT. INDIVIDUAL SPECIES OR COMMUNITIES WERE SELECTED AS INDICATORS OF POTENTIAL IMPACTS AT THE NEWSOM BROTHERS SITE, AND EXPOSURE OF THESE RECEPTORS WAS QUANTIFIED. RECEPTORS FOR WHICH EXPOSURE WAS QUANTIFIED WERE TERRESTRIAL PLANTS, SMALL MAMMALS, BIRDS, AND AQUATIC LIFE. THE AVAILABLE TOXICOLOGICAL LITERATURE WAS REVIEWED TO IDENTIFY EXPOSURE CONCENTRATIONS OR DOSES POTENTIALLY ASSOCIATED WITH ADVERSE EFFECTS IN PLANTS AND WILDLIFE. TOXICITY VALUES WERE DERIVED FOR TERRESTRIAL PLANTS AND ANIMALS FROM THE AVAILABLE LITERATURE AND AMBIENT WATER QUALITY CRITERIA (AWQC) DEVELOPED BY EPA FOR THE ENVIRONMENTAL IMPACTS AT THE NEWSOM BROTHERS SITE.

RISKS WERE ASSESSED BY COMPARING THE REPORTED ENVIRONMENTAL CONCENTRATION OR THE ESTIMATED DOSE WITH THE SELECTED TOXICITY VALUE. ABSOLUTE CONCLUSIONS REGARDING THE POTENTIAL ENVIRONMENTAL IMPACTS OF THE NEWSOM BROTHERS SITE CANNOT BE MADE BECAUSE THERE ARE MANY UNCERTAINTIES SURROUNDING THE ESTIMATES OF TOXICITY AND EXPOSURE. HOWEVER, GIVEN THE AVAILABLE DATA AND LIMITATIONS, SEVERAL GENERAL CONCLUSIONS REGARDING THE POTENTIAL FOR ENVIRONMENTAL IMPACTS ARE PRESENTED BELOW.

THE MAXIMUM CONCENTRATION OF COPPER AND ZINC IN THE SOILS OF THE SITE EXCEED LEVELS THAT ARE KNOWN TO BE PHYTOTOXIC IN AT LEAST SOME SPECIES. SMALL MAMMALS AND BIRDS THAT POTENTIALLY USE THE SURFACE WATER OF THE SITE AS A DRINKING WATER SOURCE DO NOT APPEAR TO BE AT INCREASED RISK OF ADVERSE IMPACTS, AS THE ESTIMATED INTAKES ARE WELL BELOW THOSE ESTIMATED TO BE ASSOCIATED WITH TOXIC EFFECTS. TOXIC EFFECTS TO SOME SPECIES OF AQUATIC LIFE MAY BE OCCURRING IN SOME OF THE SURFACE WATERS ON SITE AS A RESULT OF EXPOSURE TO PENTACHLOROPHENOL AND COPPER FOUND IN THE SURFACE WATERS AND PAHS AND PCBS IN THE SEDIMENTS. THESE CONTAMINANTS DO NOT APPEAR TO BE MOVING DOWNSTREAM TO ANY EXTENT, AND ARE APPARENTLY NOT IMPACTING THE WATERS OF THE LOWER PORTIONS OF JINGLING CREEK.

3.7.3.1 ENDANGERED, THREATENED AND RARE SPECIES

TWO SPECIES CLASSIFIED BY THE STATE AS THREATENED AND BY THE FEDERAL GOVERNMENTAL AS ENDANGERED ARE KNOWN TO OCCUR IN MARION COUNTY. THESE ARE THE RINGED SAWBACK TURTLE. THE US FISH AND WILDLIFE SERVICE HAS STATED THAT SPECIES ARE NOT LIKELY TO EXTEND INTO THE SITE AND NO SIGHTINGS HAVE BEEN REPORTED.

#CC

4.0 CLEANUP CRITERIA

CLEANUP OBJECTIVES AT THE NEWSOM BROTHERS SITE ARE BASED ON PROTECTION OF PUBLIC HEALTH AND THE ENVIRONMENT AND ARE CONSISTENT WITH SECTION 300.68 OF THE NCP, COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA), AS AMENDED BY SARA, EPA GUIDANCE, AND STATE LOCAL REGULATIONS. THE CLEANUP LEVELS FOR EACH CONTAMINANT OF CONCERN AT THE NEWSOM BROTHERS SITE HAVE BEEN DEVELOPED BASED ON THE FOLLOWING OBJECTIVES:

- THE PROTECTION OF THE PUBLIC HEALTH AND ENVIRONMENT (I.E., TERRESTRIAL AND AQUATIC WILDLIFE) FROM EXPOSURE TO CONTAMINATED SOIL, POND SEDIMENT, AND HAZARDOUS SUBSTANCES THROUGH REASONABLY EXPECTED CURRENT AND FUTURE EXPOSURE SCENARIOS
- THE PROTECTION OF ONSITE WORKERS FROM INHALATION OF DUST AND VAPORS THROUGH CURRENT EXPOSURE SCENARIOS

- THE PREVENTION OF THE SPREAD OF CONTAMINANTS IDENTIFIED ONSITE
- THE REDUCTION OF THE POTENTIAL FOR FUTURE CONTAMINATION OF GROUND AND SURFACE WATER

THE SOIL AND SEDIMENT CLEANUP GOALS WERE BASED ON AN INCREASED POTENTIAL CANCER RISK OF 10^{-6} , WHICH IS CONSISTENT WITH GUIDANCE UNDER SARA. EPA GENERALLY CONSIDERS INCREASED POTENTIAL CANCER RISKS OF 10^{-4} TO 10^{-7} IN DEVELOPING CLEANUP GOALS AT SUPERFUND SITES. A RISK LEVEL OF 10^{-6} WAS SELECTED BY EPA TO DEVELOP CLEANUP GOALS FOR CHEMICALS AT THE SITE TO ENSURE A HIGH LEVEL OF PROTECTION OF PUBLIC HEALTH AT THE SITE. IN ADDITION, EXPOSURE SCENARIOS CONSIDERED IN THE EA ARE VERY CONSERVATIVE IN THAT THE SCENARIOS ARE NOT LIKELY TO OCCUR AT THIS SITE, BUT HAVE BEEN INCLUDED TO PROVIDE ADDED PROTECTION OF PUBLIC HEALTH FOR POSSIBLE FUTURE EVENTS.

4.1 GROUNDWATER CLEANUP CRITERIA

ARARS THAT APPLY TO CONTAMINANTS FOUND IN THE GROUNDWATER AT THE NEWSOM BROTHERS SITE ARE GIVEN IN TABLE 4-1. REQUIREMENTS WERE OBTAINED FROM THE SAFE DRINKING WATER ACT (SDWA) IN THE FORM OF SDWA MCLS AND SDWA MCLGS. IN CASES WHERE AN MCL OR AN MCLG HAS NOT BEEN ESTABLISHED, FEDERAL AMBIENT WATER QUALITY CRITERIA (AWQC), ADJUSTED FOR DRINKING WATER, WERE USED TO ESTABLISH CLEANUP GOALS.

GROUNDWATER SAMPLING CONDUCTED DURING THE PHASE II RI INDICATED THE PRESENCE OF MISCELLANEOUS ORGANIC COMPOUNDS (TENTATIVELY DETECTED) AT LOW ESTIMATED LEVELS. OF THE INORGANIC COMPOUNDS, LEAD WAS THE ONLY COMPOUND DETECTED AT LEVELS ABOVE THE MCL. THE MCL FOR LEAD IS 0.05 MG/L. LEAD WAS DETECTED IN THREE WELLS ON THE SITE AT 0.160, 0.120, AND 0.084 MG/L, BUT LEAD WAS ALSO A CONTAMINANT OF THE DRILLING MUD USED AT THE SITE. DUE TO THE LOW CONCENTRATION OF THE CONTAMINANTS, NO GROUNDWATER REMEDIATION IS RECOMMENDED AT THIS TIME. HOWEVER, GROUNDWATER MONITORING SHOULD BE CONTINUED IN THE FUTURE TO CONFIRM THAT CONTAMINATION IS NOT PRESENT IN THE GROUNDWATER.

A MONITORING PROGRAM WITH PERIODIC SAMPLING OF A SELECT NUMBER OF WELLS WOULD BE APPROPRIATE FOR THIS PURPOSE. THE INITIATION OF SUCH A MONITORING PROGRAM SHOULD TAKE PLACE AFTER THE THREE CONTAMINATED WELLS HAVE BEEN REDEVELOPED USING A SURGE TECHNIQUE IN ORDER TO REMOVE ANY REMAINING DRILLING MUD.

4.2 SURFACE WATER CLEANUP CRITERIA

SURFACE WATER WAS SAMPLED TO DETERMINE THE POTENTIAL FOR OFFSITE MIGRATION OF CONTAMINANTS. ARARS FOR THE CONTAMINANTS DETECTED IN SURFACE WATERS AT THE NEWSOM BROTHERS SITE ARE PRESENTED IN TABLE 4-2. BECAUSE SURFACE WATER IS NOT A DIRECT SOURCE OF POTABLE WATER, BUT SHOULD BE SAFE FOR RECREATION AND INGESTION BY AQUATIC ORGANISMS, MISSISSIPPI'S AWQC WERE USED TO DETERMINE SITE REMEDIATION GOALS. HOWEVER, IF THE DETECTION LEVEL IS HIGHER THAN THE GOAL, THE DETECTION LEVEL IS CHOSEN AS THE STANDARD FOR CLEANUP. IN ADDITION, IF THE AWQC WAS NOT AVAILABLE FOR A CONTAMINANT OF CONCERN, THE APPLICABLE SDWA GOAL WAS SELECTED.

NO SURFACE WATER REMEDIATION IS REQUIRED AT THE SITE BECAUSE ONSITE SAMPLING RESULTS YIELDED VALUES BELOW THE APPROPRIATE ARAR. ONE OFFSITE SAMPLE COLLECTED DURING THE PHASE I RI SHOWED ESTIMATED MERCURY VALUES ABOVE THE ARAR; HOWEVER, THIS SAMPLE DOES NOT APPEAR TO HAVE BEEN REPRESENTATIVE OF SITE CONDITIONS AND THE RESULT IS ANOMALOUS.

SURFACE WATER MAY BE REMOVED FROM ONSITE PONDS TO ALLOW SEDIMENT REMEDIATION; HOWEVER, THIS WATER IS NOT CONSIDERED HAZARDOUS AND COULD BE SAFELY DISCHARGED TO NEARBY SURFACE WATERS. NEVERTHELESS, THE WATER MUST BE ANALYZED AND BIOASSAYS PERFORMED BEFORE DISCHARGE TO ENSURE THAT WATER QUALITY CRITERIA ARE NOT EXCEEDED AND IT IS NON-TOXIC TO AQUATIC LIFE.

4.3 SOIL CLEANUP CRITERIA

CONSIDERING EACH OF THE PREVIOUSLY DISCUSSED EXPOSURE SCENARIOS, CLEANUP GOALS WERE DEVELOPED. THE EA IDENTIFIED CPAHS AS THE ONLY CONTAMINANTS PRESENT IN THE SOILS OF THE SITE AT CONCENTRATIONS THAT COULD POSSIBLY CAUSE ADVERSE HUMAN HEALTH IMPACTS. HOWEVER, SINCE THE CLEANUP LEVELS FOR CARCINOGENIC POLYAROMATIC HYDROCARBON (CPAH) COMPOUNDS IN SOIL CALCULATED AT

MAXIMUM EXPOSURE FOR THE 10-6 RISK LEVEL WERE SUBSTANTIALLY BELOW EXPECTED BACKGROUND CONCENTRATIONS OF THESE COMPOUNDS, A SOIL CLEANUP LEVEL OF 10 MG/KG WAS SELECTED FOR CPAHS BY EPA (SEE FIGURE 3-2). THIS CLEANUP LEVEL IS BASED ON NATURAL BACKGROUND CONCENTRATIONS AND RISK VALUES OF THE AVERAGE EXPOSURE SCENARIOS AND IS CONSISTENT WITH ACTIONS AT OTHER SUPERFUND SITES.

SEVERAL AREAS AT THE NEWSOM BROTHERS SITE WERE DISTURBED DURING THE EPA REMOVAL ACTION CONDUCTED IN LATE 1987 THROUGH EARLY 1988. DURING THIS REMOVAL ACTION, BURIED HAZARDOUS MATERIALS WERE EXCAVATED AND DISPOSED OF AT AN OFFSITE LOCATION. IN CERTAIN DISTURBED AREAS, POTENTIALLY CONTAMINATED SOIL WAS USED TO FILL THE EXCAVATIONS. THESE AREAS ARE CONSIDERED TO REQUIRE FURTHER SOIL REMEDIATION AND REMOVAL VOLUMES HAVE BEEN CALCULATED FOR THESE AREAS. THESE VOLUMES ARE PRESENTED IN TABLE 4-3. ASSUMPTIONS OF THE AMOUNT OF SOIL TO BE REMOVED FROM BURIAL AREAS ARE INCLUDED IN THIS TABLE, AND ARE GENERALLY MADE BASED ON INFORMATION OBTAINED FROM PERSONNEL INVOLVED WITH THE EPA REMOVAL ACTION. INCLUSION OF THESE AREAS IN CALCULATION OF THE REMEDIAL VOLUME FOR THE SITE IS CONSERVATIVE IN THAT NO CLEAR CONTAMINATION HAS BEEN IDENTIFIED. DURING THE REMEDIAL ACTION, THESE AREAS SHOULD BE SAMPLED AND ANALYZED TO REFINE THE ESTIMATED REMEDIAL VOLUME. POSSIBLE CONTAMINANTS HAVE BEEN IDENTIFIED AND HEALTH BASED CLEANUP LEVELS ARE PRESENTED IN SECTION 4.6.

4.4 SEDIMENT CLEANUP CRITERIA

CLEANUP GOALS FOR POND SEDIMENTS WERE DEVELOPED DURING THE EXPOSURE SCENARIO PREVIOUSLY DESCRIBED. FOR A SCENARIO OF FUTURE DIRECT CONTACT WITH NORTH POND SEDIMENTS BY LIFETIME RESIDENTS, THE CLEANUP GOAL FOR AROCHLOR-1254 IS CALCULATED TO BE 0.12 MG/KG AT 10-6 RISK. ALL SEDIMENTS REMOVED WHICH CONTAIN PCBS WILL BE TREATED AS PCB WASTE IN ACCORDANCE WITH 40 CFR 761.65. ALL OTHER CHEMICALS DETECTED IN THE NORTH POND SEDIMENT PRESENT A LOWER THAN 10-6 RISK. THE CLEANUP GOAL FOR THE SEDIMENTS IN THE CREEK UPGRADIENT OF THE NORTH POND, NORTH POND SEDIMENTS, EAST POND SEDIMENTS, AND THE HORSESHOE POND IS BASED ON CPAHS AT THE CLEANUP LEVEL OF 10 MG/KG AS SELECTED BY EPA. THIS CLEANUP GOAL WAS SELECTED AFTER CONSIDERATION OF REASONABLY EXPECTED BACKGROUND LEVELS FOR THESE CHEMICALS AND AVERAGE EXPOSURE SCENARIOS.

TABLE 4-4 CONTAINS ESTIMATES OF THE VOLUME OF SEDIMENT TO BE REMOVED AND THE ASSUMPTIONS REGARDING THE DIMENSIONS OF THE REMOVAL AREAS.

4.5 HAZARDOUS SUBSTANCES CLEANUP CRITERIA

HAZARDOUS SUBSTANCES WERE OBSERVED IN THE FORM OF TWO SEPARATE TYPES OF WASTE MATERIAL, TAR-LIKE WASTE MATERIAL AND A RESIN-TYPE WASTE MATERIAL. THESE MATERIALS WERE SAMPLED DURING BOTH THE PHASE I AND PHASE II RI AND FOUND TO CONTAIN A WIDE VARIETY OF ORGANIC COMPOUNDS. THE HAZARDOUS SUBSTANCES PRESENTED DIFFICULTIES IN PERFORMING LABORATORY ANALYSIS, AND THE PRESENCE OF HIGH CONCENTRATIONS OF UNIDENTIFIED CHEMICALS WAS INDICATED. DUE TO THE PRESENCE OF THESE UNIDENTIFIED CONTAMINANTS, REMOVAL AND THERMAL DESTRUCTION OF THESE HAZARDOUS SUBSTANCES IS RECOMMENDED. AN ESTIMATED 650 CUBIC YARDS OF THESE MATERIALS ARE PRESENT ON THE SITE.

4.6 ADDITIONAL HEALTH BASED CLEANUP CRITERIA

SOME COMPOUNDS ASSOCIATED WITH THE DRUMMED WASTE AND OTHER WASTE MATERIAL REMOVED FROM THE SITE DURING THE REMOVAL ACTIVITIES MAY BE PRESENT IN NORTH POND SEDIMENTS, DRAINAGE SYSTEM SEDIMENTS, AND IN THE AREAS WHERE SOILS WERE RETURNED TO THE EXCAVATION AREAS. THESE COMPOUNDS WERE PRESENT IN HIGH CONCENTRATIONS IN THE WASTE MATERIALS. THEREFORE, HEALTH BASED CLEANUP LEVELS HAVE BEEN CALCULATED FOR THESE COMPOUNDS USING THE PREVIOUSLY DESCRIBED EXPOSURE SCENARIOS AND PROTECTION LEVELS. THE CLEANUP LEVELS FOR THESE COMPOUNDS ARE PRESENTED IN TABLE 4-5. SOIL IN THE BURIAL AREAS AND SEDIMENTS SHOULD BE CAREFULLY ANALYZED TO DETERMINE IF THE COMPOUNDS ARE PRESENT AT LEVELS THAT REQUIRE SOIL OR SEDIMENT REMOVAL.

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5.0 ALTERNATIVES EVALUATION

THE PURPOSE OF THE REMEDIAL ACTION AT THE NEWSOM BROTHERS SITE IS TO MITIGATE AND MINIMIZE POTENTIAL RISKS TO PUBLIC HEALTH, WELFARE, AND THE ENVIRONMENT POSED BY CONTAMINATED SITE SOILS,

SEDIMENTS, AND HAZARDOUS SUBSTANCES. AN INITIAL SCREENING OF A WIDE RANGE OF APPLICABLE TECHNOLOGIES WAS PERFORMED TO IDENTIFY THOSE WHICH BEST MEET THE CRITERIA OF SECTION 300.68 OF THE NATIONAL CONTINGENCY PLAN (NCP). FOLLOWING THE INITIAL SCREENING OF TECHNOLOGIES, POTENTIAL REMEDIAL ACTION ALTERNATIVES WERE IDENTIFIED AND ANALYZED. TABLE 5-1 SUMMARIZES THE TECHNOLOGY SCREENING PROCESS. EACH OF THE REMAINING ALTERNATIVES FOR SITE REMEDIATION WAS EVALUATED BASED ON COST, TECHNICAL FEASIBILITY, IMPLEMENTABILITY AND RELIABILITY, ATTAINMENT OF INSTITUTIONAL REQUIREMENTS, AND DEGREE OF PROTECTION OF PUBLIC HEALTH, WELFARE, AND THE ENVIRONMENT. THE FOLLOWING SEVEN REMEDIAL ACTION ALTERNATIVES WERE CONSIDERED:

1. NO ACTION
2. OFF-SITE DISPOSAL OF SOIL AND SEDIMENT, AND OFF-SITE THERMAL DESTRUCTION OF HAZARDOUS SUBSTANCES AT FACILITIES APPROVED UNDER RCRA
3. ON-SITE INCINERATION OF SOIL, SEDIMENT, AND HAZARDOUS SUBSTANCES
4. ON-SITE INCINERATION OF SOIL AND HAZARDOUS SUBSTANCES; ON-SITE CAPPING OF SEDIMENT
5. ON-SITE CAPPING OF SOIL AND SEDIMENT; OFF-SITE INCINERATION OF HAZARDOUS SUBSTANCES
6. ON-SITE ENCAPSULATION OF SOIL AND CAPPING OF SEDIMENT; OFF-SITE INCINERATION OF HAZARDOUS SUBSTANCES AT A RCRA-APPROVED FACILITY
7. SOLIDIFICATION/STABILIZATION OF SOIL AND SEDIMENT; OFFSITE DISPOSAL OF HAZARDOUS SUBSTANCES.

COSTS OF THE SEVEN REMEDIAL ALTERNATIVES ARE PRESENTED IN TABLE 5-2. ALL ALTERNATIVES ARE DESIGNED TO ISOLATE OR TREAT THE VOLUMES OF SOILS, SEDIMENTS, AND WASTE MATERIAL DESCRIBED IN SECTION 3.0. THESE VOLUMES OF MATERIAL ARE BASED ON THE CLEANUP LEVELS FOR THE VARIOUS MEDIA AS DESCRIBED IN SECTION 4.0. AT THE COMPLETION OF ALL REMEDIAL ACTION ALTERNATIVES THE HEALTH RISKS POSED BY DIRECT CONTACT WITH CONTAMINATED MEDIA AT THE SITE WOULD BE NO GREATER THAN 1×10^{-6} UNDER THE EXPOSURE SCENARIOS DESCRIBED IN THE ENDANGERMENT ASSESSMENT.

5.0.1 ALTERNATIVE 1 - NO ACTION ALTERNATIVE

THE NATIONAL OIL AND HAZARDOUS SUBSTANCES CONTINGENCY PLAN REQUIRES THAT THE NO ACTION ALTERNATIVE BE CONSIDERED DURING THE FEASIBILITY STUDY. THE NO ACTION ALTERNATIVE WAS EVALUATED IN THE ENDANGERMENT ASSESSMENT TO DETERMINE THE ASSOCIATED HEALTH RISKS.

UNDER THE NO ACTION ALTERNATIVE, SOIL, SEDIMENT AND HAZARDOUS SUBSTANCES WOULD REMAIN CONTAMINATED WITH TOXIC SUBSTANCES REGULATED BY LOCAL, STATE, AND FEDERAL LAWS. POTENTIAL IMPACTS OF NO REMEDIATION MIGHT INCLUDE OCCUPATIONAL OR PUBLIC EXPOSURE, DECLINE IN PROPERTY VALUES, EXPENDITURES FOR LEGAL SERVICES, DEPRESSED AREA GROWTH, EXPENDITURES FOR LABORATORY ANALYSES AND MONITORING, RESTRICTED ACCESS TO THE SITE, AND ENVIRONMENTAL IMPACTS.

APPROXIMATELY FOUR MONTHS WOULD BE REQUIRED FOR THE EXECUTION OF ADMINISTRATIVE ACTIVITIES, SELECTION OF A CONTRACTOR TO PROVIDE CONTINUED MAINTENANCE AT THE SITE, AND THE PREPARATION OF CONTRACTS. THE ONLY CAPITAL COSTS ASSOCIATED WITH THE NO ACTION ALTERNATIVE WOULD BE THE PLACEMENT OF WARNING SIGNS. OPERATION AND MAINTENANCE COSTS WOULD INCLUDE PERIODIC GROUNDWATER MONITORING, ANALYSIS COSTS, AND UPKEEP OF THE FENCE AND GROUND MAINTENANCE. THE FOLLOWING IS A SUMMARY OF THE ESTIMATED COSTS ASSOCIATED WITH THE NO ACTION ALTERNATIVE:

PRESENT WORTH OPERATION

AND MAINTENANCE (O&M) COST: \$1,005,852

TOTAL PRESENT WORTH COST: \$1,005,852

5.0.2 ALTERNATIVE 2 - OFFSITE DISPOSAL OF SOIL AND SEDIMENT, AND THERMAL DESTRUCTION OF HAZARDOUS SUBSTANCES

THIS ALTERNATIVE INVOLVES EXCAVATION AND OFFSITE DISPOSAL OF CONTAMINATED SOIL, SEDIMENT AND HAZARDOUS SUBSTANCES. ALL MATERIALS WOULD BE TRANSPORTED TO AN APPROVED RCRA REGULATED DISPOSAL FACILITY. DUE TO THE HIGH LEVELS OF ORGANIC MATERIALS PRESENT IN SAMPLES OF THE HAZARDOUS SUBSTANCES, THIS MATERIAL WOULD BE SUBJECTED TO THERMAL DESTRUCTION AT AN OFFSITE FACILITY. EXCAVATION OF ONSITE SEDIMENTS WOULD REQUIRE DEWATERING THE NORTH POND, EAST POND, HORSESHOE

POND AND THE CONCRETE DRAINAGE SYSTEM. THIS WATER WOULD BE CONTAINED ONSITE BY PUMPING TO THE HORSESHOE POND. THE WATER WOULD BE ANALYZED AND BIOASSAYS PERFORMED BEFORE DISCHARGE TO BE SURE THAT NO WATER QUALITY CRITERIA ARE EXCEEDED AND IT IS NON-TOXIC TO AQUATIC LIFE.

AFTER EXCAVATION, THE CONTAMINATED SOIL, SEDIMENT, AND HAZARDOUS SUBSTANCES WOULD BE HAULED TO A RCRA APPROVED FACILITY. THE EXCAVATED SOILS AND SEDIMENTS WOULD BE REPRESENTATIVELY ANALYZED TO DETERMINE IF THEY ARE RCRA HAZARDOUS WASTES. IF RCRA HAZARDOUS WASTE IS FOUND IT WILL BE TREATED PRIOR TO LAND DISPOSAL OR A TREATABILITY VARIANCE WILL BE SOUGHT. EP TOXICITY AND TCLP TEST WILL BE PERFORMED. REMOVAL WILL BE CONDUCTED IN COMPLIANCE WITH CERCLA OFF-SITE POLICIES.

APPROXIMATELY FOUR MONTHS WOULD BE REQUIRED FOR EXCAVATION DESIGN, CONTRACTOR SELECTION, AND APPROVAL BY THE OFFSITE DISPOSAL FACILITY. THIS ALTERNATIVE COULD BE IMPLEMENTED RAPIDLY AFTER CONTRACTOR SELECTION, AND THE COMPLETE REMEDIAL ACTION SHOULD TAKE LESS THAN SIX MONTHS. GROUNDWATER MONITORING WOULD BE CONDUCTED FOR FIVE YEARS FOLLOWING THE REMEDIAL ACTION TO ENSURE NO GROUNDWATER CONTAMINATION IS PRESENT AT THE SITE.

AMBIENT AIR MONITORING WOULD BE CONDUCTED DURING EXCAVATION ACTIVITIES. THE MONITORING WOULD BE CONDUCTED AT THE SITE PERIMETER TO ENSURE THAT NEARBY RESIDENTS WERE NOT EXPOSED TO HAZARDOUS VAPORS. IN ADDITION, CONTINUOUS MONITORING WOULD BE CONDUCTED DURING EXCAVATION TO PROVIDE PROTECTION OF ONSITE WORKERS.

THE FOLLOWING IS A SUMMARY OF THE ESTIMATED COSTS ASSOCIATED WITH THIS ALTERNATIVE:

TOTAL CONSTRUCTION COST:	\$ 13,660,024
PRESENT WORTH O&M COST:	520,225
 TOTAL PRESENT WORTH COST:	 \$ 14,180,249

5.0.3 ALTERNATIVE 3 - ONSITE THERMAL TREATMENT OF SOIL, SEDIMENT AND HAZARDOUS SUBSTANCES

THIS ALTERNATIVE ALLOWS SOURCE CONTROL FOR THE CONTAMINATED MEDIA AT THE NEWSOM BROTHERS SITE. SURFACE WATER REMOVED DURING EXCAVATION OF SEDIMENTS WOULD BE TREATED IN THE MANNER DESCRIBED IN ALTERNATIVE 2. THE TOTAL VOLUME OF CONTAMINATED MATERIAL TO BE TREATED IS APPROXIMATELY 33,500 CUBIC YARDS.

A MOBILE THERMAL TREATMENT UNIT IS USED IN THE ECONOMIC EVALUATIONS. LOW TEMPERATURE THERMAL TREATMENT WOULD BE USED AT THE SITE TO DESORB THE CONTAMINANTS IN A PRIMARY CHAMBER AND DESTROY THEM IN A SECONDARY COMBUSTION CHAMBER. THE ORGANIC CONTAMINANTS ARE THERMALLY DESTROYED AND THE SOIL IS LEFT ESSENTIALLY THE SAME.

A STARTUP PERIOD OF APPROXIMATELY 75 WORKING DAYS IS TO BE ALLOTTED TO THIS OPERATION. DURING THIS TIME, THE EQUIPMENT WOULD BE TESTED TO CONFIRM ITS SAFETY, AND OPERATING PARAMETERS WOULD BE GENERATED FOR THE PROCESS. UP TO 150 TONS OF SOIL PER DAY CAN BE INCINERATED DEPENDING UPON THE CONDITION OF THE SOIL PRIOR TO ITS INTRODUCTION INTO THE FURNACE. THIS IMPLIES THAT AT BEST, WITH A LEAST 25 PERCENT DOWN-TIME FOR MAINTENANCE AND REPAIRS, THE AROUND-THE-CLOCK OPERATION WOULD REQUIRE ABOUT 540 WORKING DAYS. MORE REALISTICALLY, 1.5 YEARS SHOULD BE ALLOTTED FOR THE TOTAL INCINERATION PROCEDURE OF 50,000 TONS OF CONTAMINATED SOILS, SEDIMENT AND HAZARDOUS SUBSTANCES. ADDITIONALLY, APPROXIMATELY 100 DAYS WOULD BE REQUIRED FOR MOBILIZATION, EQUIPMENT ORDERS, AND INSTALLATION. NO LONG LEAD EQUIPMENT (EXCEEDING 10 WEEKS DELIVERY) IS ANTICIPATED.

PRECONSTRUCTION ACTIVITIES, INCLUDING CONCEPTUAL AND FINAL DESIGNS, SPECIFICATIONS, AND PREPARATION OF CONTRACT DOCUMENTS FOR BIDDING, ARE ESTIMATED AT ABOUT 180 WORKING DAYS (8-1/2 MONTHS). THEREFORE, THE OVERALL PROJECT DURATION IS ESTIMATED TO BE APPROXIMATELY 830 WORKING DAYS FOR THE INITIAL DESIGN PHASE TO THE COMPLETION OF CONSTRUCTION.

MONITORING CONCERNS SPECIFIC TO THE INCINERATION OPERATION ARE SCRUBBER EFFLUENT COMPOSITION, LEVELS OF CONTAMINATION IN THE INCINERATED SOIL, CONTAMINANTS IN THE STACK GAS, PCP CONTENT OF THE INCOMING SOILS, SYSTEM PRESSURE AND TEMPERATURE, AND COMBUSTION AIR AND SCRUBBER WATER FLOW RATES. THESE FACTORS ARE PREEMINENT CONCERNS FOR THE INCINERATION ALTERNATIVE AND CONSIDERABLE

PROCESS CONTROL MUST BE EXERCISED DUE TO THE TOXICITY OF MATERIALS PRESENT.

IN ADDITION TO THE ABOVE CONCERNS, THIS REMEDY REQUIRES CONTINUED USE OF PREVIOUSLY INSTALLED GROUNDWATER MONITOR WELLS TO DETERMINE AND MAINTAIN RECORDS OF THE GROUNDWATER QUALITY AT THE SITE. THE MONITORING SCHEDULE FOR THE GROUNDWATER PHASE IS THE SAME AS THAT OUTLINED IN ALTERNATIVE 2.

THE FOLLOWING IS A SUMMARY OF THE ESTIMATED COST ASSOCIATED WITH THIS ALTERNATIVE:

TOTAL CONSTRUCTION COST	\$ 14,932,248
PRESENT WORTH O&M COST	520,225
 TOTAL PRESENT WORTH COST	 \$ 15,452,473

5.0.4. ALTERNATIVE 4 - ONSITE THERMAL TREATMENT OF SOIL AND HAZARDOUS SUBSTANCES: CAPPING OF SEDIMENTS

THIS ALTERNATIVE ALLOWS SOURCE CONTROL FOR THE SOIL AND HAZARDOUS SUBSTANCES AT THE NEWSOM BROTHERS SITE AND CONTAINMENT OF SEDIMENTS. THE PONDS WOULD BE DEWATERED IN THE MANNER OUTLINED IN ALTERNATIVE 2. CAPPING OF THE NORTH, EAST, AND HORSESHOE PONDS WOULD BE DONE BY FILLING THESE PONDS WITH A LOW PERMEABILITY MATERIAL SUCH AS CLAY, AND COVERING WITH A MULTI-COMPONENT RCRA CAP. THERMAL TREATMENT WOULD BE CONDUCTED AS DESCRIBED IN ALTERNATIVE 3. A STARTUP PERIOD OF APPROXIMATELY 75 WORKING DAYS IS TO BE ALLOTTED TO THIS OPERATION. DURING THIS TIME, THE EQUIPMENT WOULD BE TESTED TO CONFIRM ITS SAFETY, AND OPERATING PARAMETERS WOULD BE GENERATED FOR THE PROCESS. UP TO 4.2 TONS OF SOIL PER HOUR CAN BE INCINERATED DEPENDING UPON THE CONDITION OF THE SOIL PRIOR TO ITS INTRODUCTION INTO THE FURNANCE. THIS IMPLIES THAT AT BEST, WITH AT LEAST 25 PERCENT DOWN TIME FOR MAINTENANCE AND REPAIRS, THE AROUND-THE-CLOCK OPERATION WOULD REQUIRE ABOUT 540 WORKING DAYS. MORE REALISTICALLY, 1.5 YEARS SHOULD BE ALLOTTED FOR THE TOTAL INCINERATION PROCEDURE OF 40,000 TONS OF CONTAMINATED SOILS AND HAZARDOUS SUBSTANCES. ADDITIONALLY, APPROXIMATELY 100 DAYS WILL BE REQUIRED FOR MOBILIZATION, EQUIPMENT ORDERS, AND INSTALLATION. NO LONG LEAD EQUIPMENT DELIVERY (EXCEEDING 10 WEEKS) DELIVERY IS ANTICIPATED.

PRECONSTRUCTION ACTIVITIES, INCLUDING CONCEPTUAL AND FINAL DESIGNS, SPECIFICATIONS, AND PREPARATION OF CONTRACT DOCUMENT FOR BIDDING, ARE ESTIMATED AT ABOUT 180 WORKING DAYS (8-1/2 MONTHS). THEREFORE, THE OVERALL PROJECT DURATION IS ESTIMATED TO BE APPROXIMATELY 830 WORKING DAYS FROM THE INITIAL DESIGN PHASE TO THE COMPLETION OF CONSTRUCTION.

MONITORING FOR THE CAPPING OF SEDIMENTS INCLUDES REGULAR INSPECTION OF THE CAP FOR SIGNS OF EROSION, SETTLEMENTS, DETERIORATION, OR INVASION OF THE CAP BY DEEP ROOTED VEGETATION OR BURROWING ANIMALS.

MONITORING CONCERNS SPECIFIC TO THE INCINERATION OPERATION ARE DISCUSSED IN ALTERNATIVE 3. IN ADDITION, THIS REMEDY REQUIRES CONTINUED USE OF PREVIOUSLY INSTALLED GROUNDWATER MONITOR WELLS TO DETERMINE AND MAINTAIN RECORDS OF THE GROUNDWATER QUALITY AT THE SITE. THE MONITORING SCHEDULE FOR THE GROUNDWATER PHASE IS TO COLLECT SAMPLES QUARTERLY FOR ONE YEAR AND SEMI-ANNUALLY FOR 29 YEARS THEREAFTER.

THE FOLLOWING IS A SUMMARY OF THE ESTIMATED COST ASSOCIATED WITH THIS ALTERNATIVE:

TOTAL CONSTRUCTION COST:	\$ 12,880,846
 PRESENT WORTH O&M COST:	 807,592
 TOTAL PRESENT WORTH COST:	 \$ 13,688,438

5.0.5 ALTERNATIVE 5 - CAPPING OF SOIL AND SEDIMENT; OFFSITE DISPOSAL OF HAZARDOUS SUBSTANCES

SURFACE CAPPING OF THE CONTAMINATED SOIL INVOLVES CONSTRUCTING A THREE LAYERED CAP ACCORDING TO RCRA GUIDELINES. THE ONSITE PONDS WOULD BE DEWATERED IN THE MANNER DESCRIBED IN ALTERNATIVE 2. THE INSTALLATION OF A SURFACE CAP WOULD INHIBIT INFILTRATION THROUGH THE CONTAMINATED SOIL

THEREBY REDUCING THE MIGRATION OF POLLUTANTS TO THE GROUNDWATER. THE CAP WOULD BE INSTALLED OVER THE AREA OF CONTAMINATED SOIL WHICH ENCOMPASSES APPROXIMATELY 3/4 ACRE. SEDIMENT CAPPING CONSISTS OF FILLING THE NORTH AND EAST PONDS WITH CLAY. HAZARDOUS SUBSTANCES WOULD BE DISPOSED OF AT AN OFFSITE FACILITY.

SOIL CAPPING WOULD FIRST INCLUDE THE PLACEMENT OF A TWO FOOT CLAY LAYER COMPACTED IN SIX INCH LIFTS. A TWENTY MIL THICK SYNTHETIC LINER WOULD THEN BE PLACED OVER THE CLAY. NEXT, A ONE FOOT THICK DRAINAGE LAYER OF GRAVEL WOULD BE SPREAD AND A FILTER FABRIC PLACED ON TOP OF THE GRAVEL. THE FILTER FABRIC WOULD HELP TO STABILIZE A FINAL LAYER OF EIGHTEEN INCHES OF TOPSOIL. THE TOPSOIL WOULD BE VEGETATED TO PREVENT EROSION. ALSO, THE CAP WOULD HAVE A MINIMUM SLOPE OF TWO PERCENT GENERALLY TOWARD THE SOUTHEAST. DRAINAGE WOULD BE ASSIGNED TO DIRECT SURFACE RUNOFF TOWARD THE PRESENT NATURAL DRAINAGE CHANNELS. THE CAPPING OF THE SEDIMENTS IS IDENTICAL IN DETAIL TO ALTERNATIVE 4, AND THE HAZARDOUS SUBSTANCES WOULD BE INCINERATED IN A THERMAL TREATMENT FACILITY.

APPROXIMATELY SIX MONTHS WOULD BE REQUIRED FOR DESIGN AND CONTRACTOR SELECTION. ASSUMING THAT WEATHER CONDITIONS DO NOT CAUSE EXTREME DELAYS, THIS ALTERNATIVE COULD BE IMPLEMENTED IN APPROXIMATELY ONE YEAR. IT IS IMPORTANT TO NOTE THAT CONSTRUCTION MUST BE SCHEDULED TO ALLOW FOR THE SITE TO BE ADEQUATELY VEGETATED IMMEDIATELY FOLLOWING FINAL GRADING. THE TOTAL TIME TO EXCAVATE AND CAP THE CONTAMINATED SOIL IS APPROXIMATELY 14 MONTHS. THE EXCAVATION AND TRUCK LOADING OF THE CONTAMINATED SEDIMENT AND HAZARDOUS SUBSTANCES CAN BE ACCOMPLISHED AT A RATE OF 200 CUBIC YARDS PER DAY (10 TRUCKLOADS). AT THIS RATE, THESE CLEANUP ACTIVITIES WOULD TAKE ABOUT 20 WORKING DAYS. MONITORING FOR THE CAPPING OF SEDIMENTS AND SOILS INCLUDES REGULAR INSPECTION OF THE CAP FOR SIGNS OF EROSION, SETTLEMENT, DETERIORATION, OR INVASION OF THE CAP BY DEEP ROOTED VEGETATION OR BURROWING ANIMALS. GROUNDWATER MONITORING WOULD BE REQUIRED IN CONJUNCTION WITH THIS ALTERNATIVE. MONITORING WOULD INVOLVE CONTINUED USE OF THE EXISTING MONITOR WELLS TO DETERMINE WHETHER CONTAMINANTS ARE LEACHING OR MIGRATING FROM THE CAPPED AREA. FOR THE FIRST YEAR, QUARTERLY MONITORING WOULD BE REQUIRED. AFTER THE FIRST YEAR, AND DEPENDING ON RESULTS FROM THE INITIAL MONITORING PERIOD, THE MONITORING WOULD BE LIMITED TO TWICE PER YEAR FOR THE 29 YEAR POST-CLOSURE PERIOD.

THE FOLLOWING IS A SUMMARY OF THE ESTIMATED COSTS ASSOCIATED WITH THIS ALTERNATIVE:

TOTAL CONSTRUCTION COST	\$ 6,276,192
PRESENT WORTH O&M COST	1,944,525
 TOTAL PRESENT WORTH COST	 \$ 8,220,717

5.0.6 ALTERNATIVE 6 - ENCAPSULATION OF SOIL; CAPPING OF SEDIMENT; OFFSITE DISPOSAL OF HAZARDOUS SUBSTANCES

THE CONTAMINATED SOIL WOULD BE EXCAVATED AND PLACED IN A LINED, ONSITE LANDFILL. THE LANDFILL WOULD BE COVERED WITH A MULTI-COMPONENT COVER SYSTEM TO PROVIDE COMPLETE ENCAPSULATION OF THE SOIL. THE ONSITE PONDS WOULD BE DEWATERED IN A MANNER DESCRIBED IN ALTERNATIVE 2. THE CONTAMINATED SEDIMENT WOULD BE CAPPED AS IN ALTERNATIVE 4 AND HAZARDOUS SUBSTANCES WOULD BE SENT TO AN OFFSITE FACILITY AS DESCRIBED IN ALTERNATIVE 2. EXCAVATION OF SOIL, SEDIMENT AND HAZARDOUS SUBSTANCES COULD BE ACHIEVED IN 100 WORKING DAYS. MOBILIZATION, EQUIPMENT PROCUREMENT, AND EQUIPMENT INSTALLATION WOULD REQUIRE APPROXIMATELY 60 WORKING DAYS. PRECONSTRUCTION ACTIVITIES SUCH AS DESIGN AND CONTRACTOR SELECTION WOULD ADD ABOUT 180 WORKING DAYS TO THE SCHEDULE. THE TOTAL PROJECT TIME IS ESTIMATED AT ABOUT 340 WORKING DAYS.

MONITORING OF THE INTEGRITY OF THE CAP WOULD BE REQUIRED AS DESCRIBED IN PREVIOUS ALTERNATIVES. CURRENTLY INSTALLED GROUNDWATER MONITOR WELLS WOULD BE USED TO ENSURE THAT CONTAMINANTS ARE NOT LEACHING OR MIGRATING FROM THE CONTAINMENT AREA. FOR THE FIRST YEAR, QUARTERLY SAMPLING WOULD BE REQUIRED. AFTER THE FIRST YEAR, AND DEPENDING ON THE RESULTS FROM THE INITIAL MONITORING PERIOD, SAMPLING WOULD BE REDUCED TO TWICE PER YEAR FOR 29 YEARS.

THE FOLLOWING IS A SUMMARY OF THE ESTIMATED COST ASSOCIATED WITH THIS ALTERNATIVE:

TOTAL CONSTRUCTION COST	\$ 6,812,724
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PRESENT WORTH O&M COST 1,944,525

TOTAL PRESENT WORTH COST \$ 8,757,249

5.0.7 ALTERNATIVE 7 - SOLIDIFICATION/STABILIZATION OF SOIL AND SEDIMENT;
OFFSITE DISPOSAL OF HAZARDOUS SUBSTANCES

THIS ALTERNATIVE INVOLVES THE USE OF SOURCE CONTROLS TO REDUCE LEACHING AND MIGRATION OF CONTAMINANTS TO THE GROUNDWATER. THE ONSITE PONDS WOULD BE DEWATERED IN THE MANNER DESCRIBED IN ALTERNATIVE 2. SOLIDIFICATION /STABILIZATION TECHNIQUES WOULD BE APPLIED TO THE CONTAMINATED SOILS AND SEDIMENTS, AND HAZARDOUS SUBSTANCES WOULD BE SENT TO AN OFFSITE FACILITY FOR DISPOSAL.

THE SOLIDIFICATION OF THE HAZARDOUS WASTE AREA, WHICH COULD BE ACCOMPLISHED BY SEVERAL METHODS, WOULD INVOLVE A CEMENTACIOUS FIXATION OF THE CONTAMINATED SOIL ENABLING IT TO BE PERMANENTLY STORED AT THE SITE. ONE OF THE MOST COMMON SOLIDIFICATION METHODS IS TO EXCAVATE THE CONTAMINATED SOIL, TRANSPORT IT TO AN ONSITE CEMENT BATCH PLANT, MIX THE WASTES DIRECTLY WITH PORTLAND CEMENT AND OTHER AGGREGATES, AND DEPOSIT THE MIXTURE BACK INTO THE EXCAVATION FOR PERMANENT SOLIDIFICATION. THIS METHOD WOULD INCLUDE EXCAVATION OF ALL MATERIAL AND SOLIDIFICATION/STABILIZATION OF 37,611 CY. OF SOIL AND SEDIMENT. LIKewise, BULK SOLIDS FOUND ONSITE WOULD ALSO BE COMBINED WITH SOILS DURING SOLIDIFICATION AND REPLACED ONSITE. THIS WOULD BE ACCOMPLISHED BY CREATING MIXTURES OF SOIL AND SEDIMENT TO BE TREATED IN THE SOLIDIFICATION PROCESS. THE EXACT MIXTURE OF SOIL, SEDIMENT, CEMENT AND OTHER AGGREGATES TO BE USED WOULD BE DEVELOPED THROUGH TREATABILITY STUDIES TO BE CONDUCTED PRIOR TO THE REMEDIAL ACTION.

APPROXIMATELY SIX MONTHS WOULD BE REQUIRED FOR CONTRACTOR SELECTION AND MOBILIZATION. THE SOLIDIFICATION/STABILIZATION ACTIVITIES WOULD HAVE A DURATION OF APPROXIMATELY FIVE MONTHS. THE CONSTRUCTION SHOULD BE SCHEDULED TO ALLOW FOR VEGETATION TO IMMEDIATELY FOLLOW FINAL GRADING IN THE LATE SUMMER OR EARLY FALL. THE TOTAL TIME TO IMPLEMENT THIS ALTERNATIVE WOULD BE APPROXIMATELY 18 MONTHS.

THE STABILIZED AREA SHOULD BE INSPECTED ON A REGULAR BASIS FOR SIGNS OF EROSION, SETTLEMENT, OR SUBSIDENCE. IT IS RECOMMENDED THAT INSPECTIONS BE CONDUCTED FREQUENTLY IN THE FIRST 6 MONTHS WHEN PROBLEMS ARE MOST LIKELY TO APPEAR. ANY SIGNS OF UNEXPECTED SETTLING OR SUBSIDENCE SHOULD BE ADDRESSED IMMEDIATELY BY REMOVING THE OVERBURDEN AND INSPECTING AND REPAIRING THE AFFECTED AREAS.

GROUNDWATER MONITORING WOULD BE REQUIRED IN CONJUNCTION WITH THIS ALTERNATIVE. MONITORING WOULD INVOLVE CONTINUED USE OF EXISTING MONITOR WELLS TO DETERMINE WHETHER CONTAMINANTS ARE LEACHING OR MIGRATING FROM THE SOLIDIFIED MASS OR THE CAPPED AREA. FOR THE FIRST YEAR, QUARTERLY MONITORING WILL BE REQUIRED. AFTER THE FIRST YEAR, AND DEPENDING ON RESULTS FROM THE INITIAL MONITORING PERIOD, THE MONITORING PERIOD, THE MONITORING WILL BE LIMITED TO TWICE PER YEAR FOR 29 YEARS.

AIR MONITORING DURING CONSTRUCTION WOULD BE NECESSARY TO ENSURE THAT A SAFE WORKING ENVIRONMENT IS MAINTAINED AND THAT NO THREAT TO THE PUBLIC HEALTH OR THE ENVIRONMENT IS CREATED BY AIR EMISSIONS OR DUST FROM THE SITE.

THE FOLLOWING IS A SUMMARY OF THE ESTIMATED COSTS ASSOCIATED WITH THIS ALTERNATIVE:

TOTAL CONSTRUCTION COST	\$ 8,525,802
PRESENT WORTH O&M COST	1,568,543
TOTAL PRESENT WORTH COST	\$10,094,345

5.1 ALTERNATIVE COMPARISON

PRIOR TO SELECTION OF THE PREFERRED ALTERNATIVE ALL ALTERNATIVES WERE EVALUATED BASED ON THE FOLLOWING CRITERIA:

- OVERALL PROTECTIVENESS OF HUMAN HEALTH AND THE ENVIRONMENT

- COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARAR'S)
- LONG-TERM EFFECTIVENESS AND PERMANENCE
- REDUCTION OF TOXICITY, MOBILITY, OR VOLUME
- IMPLEMENTABILITY
- SHORT-TERM EFFECTIVENESS
- COST
- STATE ACCEPTANCE
- COMMUNITY ACCEPTANCE

A SUMMARY OF THIS EVALUATION FOLLOWS.

EACH OF THE ALTERNATIVES EVALUATED, WITH THE EXCEPTION OF NO ACTION, PROVIDES FOR PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT BY REMOVING THE POTENTIAL FOR EXPOSURE TO CONTAMINANTS AT THE SITE. ONSITE INCINERATION OF THE CONTAMINATED MATERIAL IS THE MOST PROTECTIVE ALTERNATIVE SINCE THE CONTAMINANTS ARE REDUCED TO NON-HARMFUL COMPOUNDS. THEREFORE, THE LONG-TERM EFFECTIVENESS OF THIS ALTERNATIVE IS EXCELLENT. THE SHORT-TERM EFFECTIVENESS OF THE REMEDY IS ALSO GOOD. HOWEVER, SOME LOCAL IMPACTS MAY EXIST DUE TO THE START UP OF THE EQUIPMENT AND OPERATION. SLIGHT RISKS MAY BE INCURRED BY RESIDENTS DUE TO PARTIALLY INCINERATED COMPOUNDS. HOWEVER, RISKS ASSOCIATED WITH INCINERATORS ARE CONSIDERED TO BE LESS THAN A 10^{-6} LEVEL. TIME FOR CLEANUP COMPLETION IS 2.4 YEARS AND IS THE LONGEST OF THE ALTERNATIVES.

OFFSITE DISPOSAL OF THE CONTAMINATED MATERIAL AT A RCRA APPROVED FACILITY REDUCES THE POTENTIAL FOR EXPOSURE OF HUMAN AND ENVIRONMENTAL RECEPTORS BY PLACEMENT AND ISOLATION OF THE MATERIALS AT A LOCATION THAT IS KNOWN TO BE SAFE FOR DISPOSAL AND CONTAINMENT DUE TO FAVORABLE GEOLOGIC CONDITIONS AND STRICT ADHERENCE TO BEST MANAGEMENT PRACTICES. THE SHORT-TERM EFFECTIVENESS OF THIS REMEDY IS GOOD SINCE THE REMEDY RELIES ON ESTABLISHED EARTH MOVING TECHNIQUES AND DURATION OF THE CLEANUP IS ONE YEAR. SHORT-TERM RISKS DUE TO TRANSPORTATION OF THE WASTES OFFSITE ARE INCURRED. UNDER ALTERNATIVE 2, THE MOST CONTAMINATED PORTION OF THE WASTE WILL BE INCINERATED THEREBY PERMANENTLY RENDERING THE WASTE NON-HAZARDOUS. SINCE THE REMAINDER OF THE CONTAMINATED MATERIAL WILL BE REMOVED FROM THE SITE, THE ALTERNATIVE WILL PROVIDE A HIGH DEGREE OF LONG-TERM PROTECTION FOR THE RECEPTORS AT THE SITE. ALTERNATIVE 7 (SOLIDIFICATION/FIXATION) RELIES ON A TECHNOLOGY WHICH IS UNPROVEN FOR LONG TERM CONTAINMENT OF THE TYPE OF ORGANIC WASTES FOUND AT THE SITE. HOWEVER, TESTS CONDUCTED ON THE SHORT TERM EFFECTIVENESS OF THE TECHNOLOGY IN CONTAINING ORGANIC WASTES HAVE INDICATED THAT IT CAN BE EFFECTIVE IF APPLIED PROPERLY. UNFORTUNATELY, THE OVERALL EFFECTIVENESS OF THIS REMEDY TO PROTECT HUMAN HEALTH AND THE ENVIRONMENT IS CURRENTLY UNKNOWN. THE ALTERNATIVES THAT RELY ON ONSITE CONTAINMENT BY WAY OF CAPPING OR ENCAPSULATION OF THE WASTES (ALTERNATIVES 4, 5, 6) WOULD ISOLATE CONTAMINANTS INTO ONE AREA AND REDUCE THE POTENTIAL FOR HUMAN EXPOSURE; HOWEVER, DUE TO THE POTENTIAL FOR SITE FLOODING AND THE SHALLOW GROUNDWATER AT THE SITE THE ABILITY OF THE ACTION TO ISOLATE THE WASTE FROM THE ENVIRONMENT IS LIMITED. SHORT TERM EFFECTIVENESS MAY BE GOOD, HOWEVER, LONGER TERM EFFECTIVENESS OF THESE CONTAINMENT REMEDIES WOULD NOT BE RELIABLE.

5.1.1 REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

THERMAL TREATMENT OF CONTAMINANTS USES HEAT UNDER CONTROLLED CONDITIONS TO BREAK DOWN ORGANIC WASTES INTO GASES, WATER VAPOR, AND ASH. THIS TECHNOLOGY EFFECTIVELY REDUCES THE MOBILITY, TOXICITY, AND VOLUME OF THE CONTAMINANTS BY DESTRUCTION OF THE COMPOUNDS. THE ASH FROM THE PROCESS CAN BE LANDFILLED AS NON-HAZARDOUS MATERIAL. WASTE GAS EMISSIONS ARE TRAPPED BY CONTROL DEVICES BEFORE THEY CAN BE RELEASED TO THE AIR. EFFLUENT FROM THE CONTROL EQUIPMENT MAY REQUIRE FURTHER TREATMENT BEFORE DISPOSAL. ALTERNATIVE 3 RELIES ON THERMAL TREATMENT OF ALL CONTAMINATED MEDIA AT THE SITE. OTHER TREATMENT ALTERNATIVES USE THERMAL DESTRUCTION TO DESTROY THE HEAVILY CONTAMINATED TAR-LIKE WASTE MATERIAL. ALTERNATIVE 4 USES THERMAL TREATMENT OF CONTAMINATED SOIL TO ELIMINATE THE TOXICITY, MOBILITY, AND VOLUME OF THE WASTE. THE OFFSITE

DISPOSAL ALTERNATIVE DOES DESTROY MOST CONTAMINATED PORTION OF THE WASTE THROUGH THERMAL TREATMENT BUT THE MAJORITY OF THE SOIL AND SEDIMENT WOULD BE LANDFILLED WITHOUT TREATMENT.

IF THE SOLIDICATION TECHNOLOGY OF ALTERNATIVE 7 WAS SUCCESSFULLY IMPLEMENTED THE MOBILITY OF THE WASTE WOULD BE GREATLY REDUCED SINCE THE CONTAMINANTS WOULD BE BOUND IN A SOLID MASS AND WHICH WOULD ELIMINATE THE PRODUCTION OF LEACHATE. IN ADDITION, SOME OF THE CONTAMINANTS MAY BE CHEMICALLY BONDED TO THE MATRIX AND THEREBY THE TOXICITY WOULD BE REDUCED. THE VOLUME OF THE CONTAMINANTS WOULD BE UNCHANGED.

5.1.3 IMPLEMENTABILITY

THE IMPLEMENTABILITY OF ALL THE ALTERNATIVES WERE CAREFULLY EVALUATED DURING THE FEASIBILITY STUDY (FS). THE TIMEFRAMES FOR IMPLEMENTATION OF EACH OF THE ALTERNATIVES ARE PRESENTED IN TABLE 5-1. ALTERNATIVES 4, 5, AND 6 RELY PRIMARILY ON DISPOSAL PRACTICES THAT ARE WELL ESTABLISHED AND USE COMMON EARTH MOVING AND LANDFILL EQUIPMENT AND MATERIALS, AND ARE EASILY IMPLEMENTED. ALTERNATIVE 2 ALSO USES EARTH MOVING TECHNOLOGY TO PREPARE THE CONTAMINATED MATERIAL FOR OFFSITE DISPOSAL. THE ADDITIONAL STEP OF TRANSPORTING THE MATERIAL TO THE FINAL DISPOSAL SITE IS REQUIRED. ON-SITE THERMAL TREATMENT IS ALSO ESTABLISHED TECHNOLOGY USING COMMERCIALY AVAILABLE MOBILE INCINERATORS. THE IMPLEMENTATION TIME FOR THIS ACTION IS THE LONGEST OF ALL THE FINAL ALTERNATIVES. THE SUCCESS OF THE SOLIDIFICATION/FIXATION TECHNOLOGY ON ORGANIC COMPOUNDS AT THE PRESENT TIME IS NOT PRESENTLY PROVEN. LONG-TERM TREATABILITY TESTS WOULD BE NECESSARY TO DETERMINE THE EFFECTIVENESS OF THE IMPLEMENTATION OF THIS ALTERNATIVE.

5.1.4 COST

A COMPARISON OF THE ESTIMATED COSTS OF THE REMEDIAL ALTERNATIVES ARE INCLUDED IN TABLE 5-2.

5.1.5 COMPLIANCE WITH ARARS

A LIST OF THE STATE, FEDERAL, AND LOCAL ARARS THAT APPLY TO THE REMEDIAL ACTION AT THIS SITE ARE PRESENTED IN TABLE 5-3. THE VARIOUS REMEDIAL ACTION ALTERNATIVES WOULD BE PERFORMED TO COMPLY WITH THESE REQUIREMENTS AND NECESSARY PERMITS MUST BE ACQUIRED BEFORE REMEDIAL ACTION ACTIVITIES BEGIN. SOME PROBLEMS MAY EXIST IN COMPLYING WITH THE ARARS. FOR EXAMPLE, FOR ONSITE LANDFILLING ACTIVITIES IN ALTERNATIVES 4, 5, 6, AND 7, FEMA AND RCRA FLOODPLAIN CRITERION MAY PRECLUDE LANDFILLING ON MAJOR PORTIONS OF THE SITE. RCRA REQUIREMENTS AND RESTRICTIONS ON LANDFILLING CERTAIN TYPES OF CONTAMINANTS MAY REQUIRE PRETREATMENT OF CERTAIN MATERIAL TO REDUCE CONTAMINANT CONCENTRATION PRIOR TO OFFSITE DISPOSAL.

5.1.5 STATE ACCEPTANCE

CONSULTATIONS WITH THE STATE OF MISSISSIPPI WERE HELD DURING THE DEVELOPMENT OF THE REMEDIAL ALTERNATIVES AND THE PROPOSED PLAN. MISSISSIPPI OFFICIALS STATED A PREFERENCE FOR THE OFFSITE DISPOSAL ALTERNATIVE. ON-SITE INCINERATION WAS NOT SUPPORTED DUE TO THE LOCATION OF THE SITE IN THE CENTER OF COLUMBIA, THE CLOSE PROXIMITY OF MANY RESIDENTS, AND THE POTENTIAL FOR OPERATIONAL PROBLEMS WITH THE MOBILE INCINERATOR. ALTERNATIVES THAT UTILIZED ON-SITE DISPOSAL WERE NOT FAVORED DUE TO THE SHALLOW GROUNDWATER (10-15 FT) AND THE POTENTIAL FOR FLOODING OF THE SITE. SOLIDIFICATION/FIXATION OF THE CONTAMINATED MATERIAL WAS NOT FAVORED SINCE THE EFFECTIVENESS OF THE TECHNOLOGY ON ORGANIC WASTES IS UNKNOWN AND MAY NOT BE PROTECTIVE.

5.1.6 COMMUNITY ACCEPTANCE

DISCUSSION WERE HELD WITH THE COMMUNITY LEADERS, ELECTED OFFICIALS, AND CITIZENS OF COLUMBIA DURING THE ALTERNATIVE SELECTION PROCESS. DURING THESE DISCUSSIONS A VERY STRONG PREFERENCE WAS EXPRESSED FOR A REMEDY THAT WOULD BE COMPLETED QUICKLY AND PERMANENTLY REMOVE THE CONTAMINATED MATERIAL FROM THE SITE. OPPOSITION WAS EXPRESSED FOR ANY ALTERNATIVE THAT WOULD ALLOW UNTREATED CONTAMINANTS TO REMAIN ON THE SITE. OPPOSITION TO ONSITE INCINERATION WAS EXPRESSED DUE TO FEARS OVER POSSIBLE ACCIDENTS AND INCINERATOR EMISSIONS HARMING THE NEARBY RESIDENTS. THE SOLIDIFICATION ALTERNATIVE WAS OPPOSED SINCE THE TECHNOLOGY IS UNPROVEN. THE PREFERRED ALTERNATIVE WAS TO REMOVE THE CONTAMINATED MATERIAL FROM THE SITE AND TREAT THE WASTE AS REQUIRED FOR OFFSITE DISPOSAL.

#RASD

6.0 RECOMMENDED ALTERNATIVE AND STATUTORY DETERMINATION

BASED ON CONSIDERATION OF THE REQUIREMENTS OF CERCLA, THE DETAILED EVALUATION OF THE ALTERNATIVES, AND PUBLIC COMMENTS, BOTH EPA AND THE STATE OF MISSISSIPPI HAVE DETERMINED THAT ALTERNATIVE 2; OFFSITE DISPOSAL OF CONTAMINATED SOILS AND SEDIMENTS WITH OFFSITE INCINERATION OF WASTE MATERIAL, IS THE MOST APPROPRIATE REMEDY FOR THE NEWSOM BROTHERS SITE IN COLUMBIA, MISSISSIPPI.

THE RESPONSE OBJECTIVES FOR THIS REMEDIAL ACTION ARE TO CONTROL EXPOSURE OF CONTACT WITH SOILS, SEDIMENTS, AND WASTE MATERIAL TO AN ACCEPTABLE 10^{-6} LEVEL. IN DETERMINING AN ACCEPTABLE CLEANUP LEVEL, THE ARARS OF ENVIRONMENTAL LAWS AND THE EXPOSURE LEVELS CALCULATED IN THE ENDANGERMENT ASSESSMENT WERE REVIEWED AND ASSESSED.

BOTH FEDERAL AND STATE ARARS WERE REVIEWED TO DETERMINE IF THERE WERE ANY STANDARDS INDICATING ACCEPTABLE LEVELS OF CONTAMINANTS IN SOILS. THE RESULTS OF THIS REVIEW INDICATE THAT NO FEDERAL OR STATE LEGAL STANDARDS EXIST FOR THE CONTAMINANTS IN SOIL OR SEDIMENTS AT THIS SITE. THEREFORE, SOIL AND SEDIMENT CLEANUP LEVELS WERE DETERMINED USING SITE SPECIFIC ANALYSIS BASED ON POTENTIAL HUMAN HEALTH AND ENVIRONMENTAL EFFECTS. THE CLEANUP LEVELS FOR EACH MEDIA ARE PRESENTED IN SECTION 4.0. THE VOLUMES OF MATERIALS TO BE EXCAVATED FROM THE SITE ARE DISCUSSED IN SECTION 6.1. THE POTENTIAL ARARS AND HEALTH BASED CLEANUP CRITERIA WERE ANALYZED DURING THE RI/FS TO DETERMINE VOLUMES OF SOIL AND SEDIMENTS TO BE EXCAVATED AND REMOVED FROM THE SITE. BECAUSE THIS ALTERNATIVE INVOLVES THE EXCAVATION AND PLACEMENT OF HAZARDOUS SUBSTANCES (SOIL, SEDIMENTS, AND WASTE), THE RCRA LAND DISPOSAL RESTRICTIONS COULD BE POTENTIAL ARARS. PENTACHLOROPHENOL, TOLUENE, AND XYLENES ARE KNOWN TO OCCUR ON THE SITE. PENTACHLOROPHENOL WAS DETECTED IN THE TAR-LIKE WASTE MATERIAL PRESENT ON THE SITE. THIS MATERIAL IS TO BE INCINERATED PRIOR TO LAND DISPOSAL. XYLENES AND TOLUENES ARE PRESENT ON SITE IN CERTAIN AREAS, HOWEVER, THESE COMPOUNDS MAY NOT BE PRESENT AT CONCENTRATIONS THAT WILL REQUIRE FURTHER CLEANUP. FUTURE SOIL AND SEDIMENT SCREENING WILL DETERMINE THE LEVELS THAT EXIST ON THE SITE. IF LEVELS THAT REQUIRE CLEANUP ARE DETECTED, TREATMENT OF THE MATERIAL TO REDUCE CONCENTRATIONS OF THESE CONTAMINANTS MAY BE NECESSARY PRIOR TO LAND DISPOSAL, IN ORDER TO COMPLY WITH LAND DISPOSAL RESTRICTIONS. THE PAHS PRESENT ON THE SITE DO NOT MEET THE LISTING CRITERIA FOR RCRA LISTED WASTE AND LAND DISPOSAL RESTRICTIONS DO NOT APPLY TO THIS CONTAMINANT AT THE PRESENT TIME.

6.0.1 STATUTORY DETERMINATIONS

UNDER ITS LEGAL AUTHORITIES, EPA'S PRIMARY RESPONSIBILITY AT SUPERFUND SITES IS TO UNDERTAKE REMEDIAL ACTIONS THAT ACHIEVE ADEQUATE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT. IN ADDITION, SECTION 121 OF CERCLA ESTABLISHES SEVERAL OTHER STATUTORY REQUIREMENTS AND PREFERENCES. THESE SPECIFY THAT WHEN COMPLETE, THE SELECTED REMEDIAL ACTION FOR THIS SITE MUST COMPLY WITH APPLICABLE OR RELEVANT AND APPROPRIATE ENVIRONMENTAL STANDARDS ESTABLISHED UNDER FEDERAL AND STATE ENVIRONMENTAL LAWS UNLESS A STATUTORY WAIVER IS JUSTIFIED. THE SELECTED REMEDY ALSO MUST BE COST-EFFECTIVE AND UTILIZE PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE. FINALLY, THE STATUTE INCLUDED A PREFERENCE FOR REMEDIES THAT EMPLOY TREATMENT THAT PERMANENTLY AND SIGNIFICANTLY REDUCE THE VOLUME, TOXICITY, OR MOBILITY OF HAZARDOUS WASTES AS THEIR PRINCIPAL ELEMENT. THE FOLLOWING SECTIONS DISCUSS HOW THE SELECTED REMEDY MEETS THESE STATUTORY REQUIREMENTS:

6.0.2 PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

THE SELECTED REMEDY PROTECTS HUMAN HEALTH THROUGH DESTRUCTION OF THE HEAVILY CONTAMINATED TAR-LIKE WASTE MATERIAL BY OFFSITE THERMAL DESTRUCTION AND DEPOSITION OF THE RESIDUAL IN A RCRA APPROVED LANDFILL. THE REMAINDER OF THE CONTAMINATED SOILS AND SEDIMENTS WILL BE ISOLATED FROM ENVIRONMENTAL AND HUMAN CONTACT BY EXCAVATION AND REMOVAL FROM THE SITE AND PLACEMENT IN A RCRA APPROVED SECURE LANDFILL. MATERIALS THAT POSE A HEALTH RISK IN EXCESS OF THE 1×10^{-6} LEVEL WILL BE REMOVED FROM THE SITE. THERE ARE NO KNOWN SHORT-TERM THREATS ASSOCIATES WITH THE REMEDY THAT CANNOT BE READILY CONTROLLED.

6.0.3 COMPLIANCE WITH ARARS

THE SELECTED REMEDY WILL ATTAIN ALL APPLICABLE OR RELEVANT AND APPROPRIATE CHEMICAL, ACTION AND LOCATION SPECIFIC REQUIREMENT. THE ARARS ARE PRESENTED BELOW:

FOR TRANSPORTATION OF HAZARDOUS WASTES:

U.S. DEPARTMENT OF TRANSPORTATION
MISSISSIPPI PUBLIC SERVICE COMMISSION REGULATION
(40 CFR 263, 45 FR 12743, 45 FR 33151, 45 FR 85022,
45 FR 86908 45 FR 86973, 48 FR 14153)

FOR OFFSITE THERMAL DESTRUCTION:

FEDERAL CLEAN AIR ACT
STATE AIR POLLUTION CONTROL REGULATIONS

FOR DEWATERING PONDS:

FEDERAL AND STATE WATER QUALITY CRITERIA
NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES)

FOR OFFSITE DISPOSAL:

RESOURCE CONSERVATION AND RECOVERY ACT
HAZARDOUS AND SOLID WASTE AMENDMENTS
LAND DISPOSAL RESTRICTIONS
WASTE ACCEPTANCE AT THE TREATMENT, STORAGE AND DISPOSAL
FACILITY CERCLA OFFSITE DISPOSAL POLICY

CLEANUP CRITERIA:

TOXIC SUBSTANCES CONTROL ACT
PCB SPILL POLICY

6.0.4 COST EFFECTIVENESS

THE SELECTED REMEDY IS COST EFFECTIVE BECAUSE IT HAS BEEN DETERMINED TO PROVIDE OVERALL EFFECTIVENESS PROPORTIONAL TO ITS COSTS. THE NET PRESENT WORTH IS ESTIMATED AT A COST OF \$14,180,000. THE ESTIMATED COSTS ARE WITHIN 100% OF THE OTHER POTENTIAL ALTERNATIVES. THE ALTERNATIVES THAT RELY ON ONSITE DISPOSAL ARE LESS EXPENSIVE, HOWEVER THE SITE IS NOT SUITABLE FOR ONSITE DISPOSAL DUE TO SHALLOW GROUNDWATER AND POTENTIAL FOR SURFACE WATER FLOODING. THEREFORE, ONSITE DISPOSAL DOES NOT OFFER A SAFE REMEDY FOR CONTAINMENT OF THE WASTES AND IS NOT COST EFFECTIVE. ONSITE INCINERATION, WHICH HAS SIMILAR BUT HIGHER COSTS, WOULD BE A COST EFFECTIVE REMEDY THAT DESTROYS THE HAZARDOUS CONSTITUENTS PRESENT ON THE SITE BUT IMPLEMENTATION WOULD BE DIFFICULT DUE TO THE UNCERTAINTY OVER THE VOLUME OF THE MATERIAL TO BE TREATED AND THE LACK OF ACCEPTANCE OF THIS ALTERNATIVE BY THE STATE AND COMMUNITY. ADDITIONALLY, THE CHOSEN ALTERNATIVE HAS THE POTENTIAL FOR FURTHER REDUCTION OF COSTS THROUGH CAREFUL SCREENING OF THE MATERIAL PRIOR TO TRANSPORT TO THE DISPOSAL SITE.

THIS SCREENING COULD SIGNIFICANTLY REDUCE THE VOLUMES OF MATERIALS TO BE REMOVED FROM THE SITE. THE SOLIDIFICATION/STABILIZATION ALTERNATIVE IS INNOVATIVE TECHNOLOGY AND IS LESS EXPENSIVE, HOWEVER ITS EFFECTIVENESS IS UNPROVEN FOR THE TYPE OF WASTES PRESENT AT THE SITE. INVESTMENT OF FUNDS FOR USE OF THIS TECHNOLOGY MAY PROVE TO BE INEFFICIENT IF THE ALTERNATIVE FAILS.

6.0.5 UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE

EPA AND THE STATE OF MISSISSIPPI HAVE DETERMINED THAT THE SELECTED REMEDY REPRESENTS THE MAXIMUM EXTENT TO WHICH PERMANENT SOLUTIONS AND TREATMENT TECHNOLOGIES CAN BE UTILIZED IN A COST EFFECTIVE MANNER FOR FINAL SOURCE CONTROL AT THE NEWSOM BROTHERS SITE. OF THOSE ALTERNATIVES THAT ARE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT AND COMPLY WITH ARARS, EPA AND THE STATE HAVE DETERMINED THAT THIS SELECTED REMEDY PROVIDES THE BEST BALANCE OF TRADEOFFS IN TERMS OF LONG-TERM EFFECTIVENESS AND PERMANENCE, REDUCTION IN TOXICITY, MOBILITY, OR VOLUME ACHIEVED THROUGH TREATMENT, SHORT TERM EFFECTIVENESS, IMPLEMENTABILITY COST, AND STATE AND COMMUNITY ACCEPTANCE.

WHILE THE SELECTED REMEDY DOES NOT OFFER AS HIGH A DEGREE OF LONG TERM EFFECTIVENESS AND PERMANENCE AS THE ONSITE INCINERATION, IT WILL SIGNIFICANTLY REDUCE THE HAZARDS POSED BY THE CONTAMINATED SOILS AT THE SITE THROUGH DISPOSAL AT A SECURE CONTAINMENT FACILITY WITH OFFSITE INCINERATION OF THE HEAVILY CONTAMINATED TAR-LIKE WASTE MATERIAL. THE REMAINING CONTAMINANTS CAN BE MANAGED WITH A HIGH DEGREE OF CERTAINTY OVER THE LONG TERM. SINCE THE STATE AND COMMUNITY WOULD NOT ACCEPT ONSITE INCINERATION AND THE EFFECTIVENESS OF OTHER ALTERNATIVES IS QUESTIONABLE, THE SELECTED REMEDY IS THE ONLY PRACTICABLE ALTERNATIVE AVAILABLE. OFFSITE INCINERATION OF THE TOTAL VOLUME OF CONTAMINATED MATERIAL WAS INITIALLY CONSIDERED BUT WAS NOT FOUND TO BE COST EFFECTIVE BECAUSE OF THE LARGE VOLUMES OF MATERIALS THAT POTENTIALLY WOULD BE TREATED. THE IMPLEMENTATION TIME OF THE SELECTED REMEDY IS APPROXIMATELY SIX MONTHS COMPARED TO AN ESTIMATED TWO AND ONE-HALF YEARS FOR ONSITE INCINERATION.

THE SELECTION OF INCINERATION OF THE CONTAMINATED BLACK TAR-LIKE WASTE MATERIAL IS CONSISTENT WITH PROGRAM EXPECTATIONS THAT INDICATED POTENTIALLY HIGHLY TOXIC WASTES ARE A PRIORITY FOR TREATMENT AND OFTEN NECESSARY TO ENSURE LONG TERM EFFECTIVENESS OF A REMEDY. THE LESS CONTAMINATED MATERIAL CAN BE EFFECTIVELY CONTAINED IN AN APPROVED FACILITY. THE ONLY ALTERNATIVES OFFERING TREATMENT FOR ALL OF THE CONTAMINATED MATERIAL IS ONSITE INCINERATION. THIS REMEDY WAS REJECTED FOR THE REASONS DISCUSSED ABOVE. THE SELECTED REMEDY CAN BE IMPLEMENTED QUICKLY AND WITH LESS DIFFICULTY THAN THE OTHER ALTERNATIVES WHILE OFFERING A HIGH DEGREE OF PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT, IS APPROVED OF BY THE STATE AND LOCAL COMMUNITY, AND IS THEREFORE DETERMINED TO BE MOST APPROPRIATE FOR USE AT THE NEWSOM BROTHERS SITE.

6.1 DESCRIPTION OF ALTERNATIVE

THE RECOMMENDED ALTERNATIVE, ALTERNATIVE 2, FOR REMEDIATION OF CONTAMINATION AT THE NEWSOM BROTHERS SITE INCLUDES THE FOLLOWING COMPONENTS:

- GROUNDWATER MONITORING WHICH WILL INCLUDE PURGING THE WELLS WHICH SHOWED LEAD CONTAMINATION.
- DRAINING OF ONSITE PONDS.
- EXCAVATION OF CONTAMINATED POND AND CREEK SEDIMENTS (ESTIMATED AT 7,309 CU. YARDS) FOR OFFSITE DISPOSAL AT AN APPROVED FACILITY.
- FILLING OF ONSITE PONDS WITH CLEAN FILL MATERIAL.
- EXCAVATION OF CONTAMINATED SOILS (ESTIMATED AT 30,302 CU. YARDS) FOR OFFSITE DISPOSAL AT AN APPROVED FACILITY.
- EXCAVATION OF REMAINING TAR-LIKE WASTE MATERIAL (ESTIMATED AT 650 CU. YARDS) FOR OFFSITE THERMAL DESTRUCTION AND DISPOSAL AT AN APPROVED FACILITY.
- RECONTOURING THE LAND SURFACE TO PREVENT ERODABLE MATERIAL FROM REACHING AREA SURFACE WATER.

ALL COMPONENTS OF THE PROPOSED REMEDY MUST BE INCLUDED IN THE REMEDIAL ACTION IN ORDER TO REDUCE POTENTIAL HUMAN HEALTH RISKS FROM THE CONTAMINANTS AT THE SITE TO THE PROPOSED 10-6 PROTECTION LEVEL. THIS PROTECTION LEVEL WAS ESTABLISHED AS AN ADDED MEASURE OF PROTECTION DUE TO THE DENSITY OF RESIDENTIAL HOUSING ADJACENT TO THE SITE AND DUE TO THE LOCATION OF THE SITE NEAR THE CENTRAL BUSINESS DISTRICT OF COLUMBIA, MISSISSIPPI.

REMOVAL OF ALL OF THE BLACK TAR-LIKE WASTE MATERIAL FROM THE LOCATIONS ON THE SITE, SHOWN IN FIGURE 6-1, IS NECESSARY DUE TO THE CONTAMINANT LEVELS IN THE MATERIAL. SINCE SMALL AMOUNTS OF THIS MATERIAL ARE SCATTERED ACROSS THE SITE SURFACE, A CAREFUL SURVEY OF THE ENTIRE SITE WILL BE NECESSARY TO ENSURE THAT ALL OF THE MATERIAL IS LOCATED AND REMOVED. THE UNDERGROUND AND SURFACE DRAINAGE SYSTEM MUST ALSO BE SURVEYED FOR THIS MATERIAL. DUE TO THE HIGH LEVELS OF ORGANIC SUBSTANCES PRESENT IN SAMPLES OF THIS MATERIAL IT WILL BE SUBJECTED TO THERMAL DESTRUCTION OFFSITE AT A RCRA APPROVED FACILITY. THE RESIDUAL MATERIAL FROM THE THERMAL

TREATMENT WILL BE LANDFILLED AT AN OFFSITE RCRA APPROVED FACILITY. THE CONTAMINATED SEDIMENTS FROM THE THREE ONSITE PONDS AND DRAINAGE AREAS MUST BE REMOVED FROM THE SITE. THE SEDIMENTS MUST BE SCREENED FOR THE PRESENCE OF CONTAMINANTS IN EXCESS OF THE CLEANUP STANDARDS LISTED IN SECTION 4.0. THE PONDS AND SEDIMENTS MUST BE DEWATERED PRIOR TO THE SEDIMENT REMOVAL. ALL WATER MUST BE ANALYZED BEFORE DISCHARGE TO ENSURE WATER QUALITY CRITERIA ARE MET AND NO TOXIC SUBSTANCES ARE DISCHARGED IN TOXIC AMOUNTS. TREATMENT OF THE DISCHARGE WATER WILL BE REQUIRED IF NECESSARY. THE PRIMARY CONTAMINANTS IDENTIFIED IN THE POND SEDIMENTS ARE POLYAROMATIC HYDROCARBONS (PAH'S) AT A MAXIMUM CONCENTRATION OF 37.5 PPM IN THE EAST POND, AND POLYCHLORINATED BIPHENYLS (PCBS) IN THE NORTH POND AT A MAXIMUM CONCENTRATION OF 10 PPM. ADDITIONAL ANALYTICAL RESULTS INDICATED THAT PCBS MAY BE PRESENT UP TO 110 PPM IN NORTH POND SEDIMENTS. THE CONTAMINATED SOILS ARE LOCATED IN THE AREAS SHOWN IN FIGURE 6-1. CAREFUL ANALYTICAL SCREENING OF THE SOIL IN THESE AREAS MUST BE COMPLETED PRIOR TO REMOVAL OF THE CONTAMINATED SOIL FOR OFFSITE DISPOSAL AT AN APPROVED FACILITY. THE SCREENING WILL IDENTIFY AREAS THAT ARE CONTAMINATED ABOVE THE CLEANUP CRITERIA DETAILED IN TABLE 4-5.

FOLLOWING THE EXCAVATION ACTIVITIES, THE AREAS MUST BE BACKFILLED TO PREVENT PONDING OF WATER. THE SITE MUST BE RECONTOURED AND SEEDED AND MULCHED TO PREVENT THE TRANSPORT OF ERODIBLE MATERIAL TO OFFSITE AREAS AND AREA STREAMS.

6.2 OPERATION AND MAINTENANCE

A THREE TO FOUR-MAN CREW WILL BE REQUIRED TO CONDUCT THE EXCAVATION ACTIVITIES. THESE PERSONNEL WILL ENSURE THAT THE MATERIALS SENT OFFSITE MEET ALL REQUIREMENTS FOR SHIPMENT AND DISPOSAL OF HAZARDOUS SUBSTANCES. THE CONTRACTOR IS EXPECTED TO MAINTAIN EQUIPMENT AND MATERIALS AS NEEDED TO CONDUCT THE EXCAVATION AND PACKAGING FOR OFFSITE DISPOSAL. THIS INCLUDES MAINTENANCE PERSONNEL, PARTS, MATERIALS, ETC. ROUTINE MAINTENANCE ACTIVITIES TO BE CONDUCTED ARE:

- PERIODIC TESTING OF PERSONNEL PROTECTIVE EQUIPMENT AND MONITORING DEVICES
- MAINTAINING AND REPAIRING EQUIPMENT
- MAINTAINING LOGS OF DATA COLLECTED
- COORDINATION FOR PROPER REPLACEMENT BACKFILLING WITH CLEAN SOIL
- DUST CONTROL

AMBIENT AIR MONITORING WOULD BE CONDUCTED DURING EXCAVATION ACTIVITIES. THE MONITORING WOULD BE CONDUCTED AT THE SITE PERIMETER TO ENSURE THAT NEARBY RESIDENTS WERE NOT EXPOSED TO HAZARDOUS VAPORS. IN ADDITION, CONTINUOUS MONITORING WOULD BE CONDUCTED DURING EXCAVATION TO PROVIDE PROTECTION OF ONSITE WORKERS. GROUNDWATER MONITORING WOULD BE CONDUCTED AT SELECTED WELLS FOR FIVE YEARS TO ENSURE NO GROUNDWATER CONTAMINATION WAS PRESENT AT THE SITE.

6.3 COST

THE SUMMARY OF THE ESTIMATED COSTS ASSOCIATED WITH THE COMPLETION OF THE REMEDY IS PRESENTED IN TABLE 6-1.

6.4 SCHEDULE

APPROXIMATELY FOUR MONTHS WOULD BE REQUIRED FOR EXCAVATION DESIGN, CONTRACTOR SELECTION, AND APPROVAL BY THE OFFSITE DISPOSAL FACILITY. THIS ALTERNATIVE COULD BE IMPLEMENTED RAPIDLY AFTER CONTRACTOR SELECTION, AND THE COMPLETE REMEDIAL ACTION SHOULD TAKE LESS THAN SIX MONTHS. GROUNDWATER MONITORING WOULD BE CONDUCTED FOR FIVE YEARS FOLLOWING THE REMEDIAL ACTION.

6.5 FUTURE ACTION

SINCE ALL CONTAMINATED MEDIA WILL BE REMOVED FROM THE SITE FUTURE ACTIVITIES WILL BE LIMITED TO GROUNDWATER MONITORING AT EXISTING MONITORING WELLS. THE MONITORING WILL CONTINUE FOR FIVE YEARS AT SELECTED WELLS.

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7.0 COMMUNITY RELATIONS

THE LOCAL COMMUNITY HAS BEEN VERY INTERESTED AND INVOLVED IN THE SITE STATUS DURING THE RI/FS AND REMOVAL ACTIONS RELATED TO THIS SITE. THEREFORE, COMMUNITY RELATIONS ACTIVITIES HAVE REMAINED AN IMPORTANT ASPECT THROUGHOUT THE RI/FS PROCESS. A PUBLIC MEETING WAS HELD IN COLUMBIA, MISSISSIPPI ON AUGUST 6, 1986, TO INFORM CONCERNED CITIZENS AND RECEIVE COMMENTS ON THE PROPOSED RI/FS WORK PLAN. AFTER COMPLETION OF THE FIRST PHASE OF THE RI ANOTHER PUBLIC MEETING WAS HELD ON SEPTEMBER 22, 1987. THE PURPOSE OF THIS MEETING WAS TO DISCUSS THE FINDINGS OF THE RI, ANNOUNCE PLANS OF AN IMMEDIATE DRUM REMOVAL ACTIVITY, AND TO SOLICIT COMMUNITY INPUT FOR THE REMOVAL ACTIVITY. THE MEETING WAS ATTENDED BY SEVERAL HUNDRED LOCAL CITIZENS AND MANY COMMENTS WERE RECEIVED ON THE DRUM REMOVAL PROPOSAL. MANY INFORMATIONAL MEETINGS WERE HELD WITH LOCAL COMMUNITY LEADERS AND ELECTED OFFICIALS DURING THE REMOVAL ACTIVITY. IN NOVEMBER 1988, EPA ESTABLISHED AN ADMINISTRATIVE RECORD FOR THE NEWSOM BROTHERS SITE AT THE SOUTH MISSISSIPPI REGIONAL LIBRARY, IN COLUMBIA, MISSISSIPPI. BY JANUARY 24, 1989, THE RI, DRAFT FS, AND FINAL ENDANGERMENT ASSESSMENT REPORTS WERE SUBMITTED TO THE REPOSITORY IN COLUMBIA, MISSISSIPPI. A PUBLIC MEETING WAS HELD AT COLUMBIA HIGH SCHOOL IN JANUARY 24, 1989, TO PRESENT THE FINDINGS OF THE RI/FS, ENDANGERMENT ASSESSMENT, AND EPA'S PREFERRED REMEDIAL ALTERNATIVE. PUBLIC COMMENT ON THE PROPOSED PLAN AND STUDY FINDINGS WAS SOLICITED AT THIS TIME. PRIOR TO THE PUBLIC MEETING EPA HAD ISSUED PRESS RELEASES, PUBLIC NOTICES, FACT SHEETS, AND THE PROPOSED PLAN TO KEEP THE PUBLIC INFORMED OF THE ACTIVITIES AT THE SITE. FOLLOWING THE JANUARY 24, 1989, PUBLIC MEETING A 30 DAY PUBLIC COMMENT PERIOD WAS OPENED AND THE COMMENT PERIOD ENDED FEBRUARY 24, 1989. A DISCUSSION OF THE COMMENTS RECEIVED IS INCLUDED IN THE RESPONSIVENESS SUMMARY IN THE APPENDIX.

#RS

RESPONSIVENESS SUMMARY

I. OVERVIEW

THE REMEDY PROPOSED BY EPA FOR THE NEWSOME BROTHERS SITE WAS TOTAL EXCAVATION AND OFF-SITE REMOVAL OF CONTAMINATED SOIL. THE STATE OF MISSISSIPPI CONCURRED WITH THIS PROPOSED ALTERNATIVE. THE STRONG CONSENSUS FROM THE COMMUNITY WAS ALSO SUPPORT FOR THIS ALTERNATIVE.

THEY DID EXPRESS CONCERNS, HOWEVER, REGARDING ITS IMPLEMENTATION, PARTICULARLY IN REGARD TO DUST CONTROL. QUESTIONS WERE ALSO RAISED REGARDING OTHER POTENTIAL SOURCES OF CONTAMINATION IN THE COMMUNITY AND THE HEALTH STUDY CURRENTLY UNDERWAY. VOLUMINOUS COMMENTS AND QUESTIONS WERE RECEIVED FROM REICHOLD CHEMICAL COMPANY, A POTENTIALLY RESPONSIBLE PARTY. THEIR COMMENTS FOCUSED ON (TO BE PROVIDED BY DAVID MELGAARD).

II. BACKGROUND ON CITIZEN INVOLVEMENT AND CONCERNS

THIS SITE STARTED AS A REMOVAL ACTION IN 1984. BECAUSE THE SITE IS SITUATED IN THE CENTER OF TOWN, COMMUNITY INTEREST IN THE SITE HAS BEEN STRONG. ONE COMMUNITY GROUP, STOP TOXIC ON-SITE POLLUTION (STOP) HAS TAKEN THE LEAD IN EXPRESSING THE CONCERNS OF THE COMMUNITY TO EPA AND THE STATE OF MISSISSIPPI. COMMUNITY RELATIONS AT THE SITE WAS EXTENSIVE, WITH EPA MAKING MANY CONTACTS WITH LOCAL OFFICIALS AND SCHEDULING SEVERAL MEETINGS WITH CITIZENS.

TO GET PUBLIC INPUT ON THE PROPOSED REMEDY, EPA HELD A 30-DAY PUBLIC COMMENT PERIOD FROM JANUARY 24 TO FEBRUARY 24, 1989. EPA'S COMMUNITY RELATIONS EFFORTS INCLUDED A FACT SHEET THAT WAS SENT TO INTERESTED CITIZENS IN JANUARY 1989, A PUBLIC MEETING NOTICE THAT APPEARED IN THE HATTIESBURG AMERICAN ON JANUARY 22, 1989, AND THE COLUMBIA PROGRESS ON JANUARY 19 AND 22, 1989, AND A PUBLIC MEETING THAT WAS HELD JANUARY 24, 1989. APPROXIMATELY 250 RI/FS AND OTHER RELEVANT DOCUMENTS. EPA ALSO HAD MANY CONTACTS WITH LOCAL OFFICIALS AND CITIZENS, GROUPS THROUGHOUT THE REMEDY SELECTION PROCESS.

III. SUMMARY OF MAJOR COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND THE EPA RESPONSES TO THE COMMENTS

CONCERNS AND QUESTIONS ON THE PROPOSED REMEDY FOR THE NEWSOM BROTHERS SITE RECEIVED AT THE PUBLIC MEETING JANUARY 24, 1989 AND DURING THE PUBLIC COMMENT PERIOD CAN BE GROUPED INTO FOUR

CATEGORIES:

- A. IMPLEMENTATION OF REMEDY
- B. HEALTH CONCERNS
- C. OFF-SITE CONTAMINATION
- D. MISCELLANEOUS

A SUMMARY OF THE COMMENTS AND EPA'S RESPONSES TO THEM IS PROVIDED BELOW.

A. IMPLEMENTATION OF REMEDY

OVERALL, CITIZENS ARE PLEASED WITH THE CHOSEN REMEDY. THEY HAVE MAJOR CONCERNS, HOWEVER, ABOUT THE DUST THAT MAY RISE DURING CLEAN-UP ACTIVITIES.

EPA RESPONSE: THE DUST PROBLEM WILL BE ADDRESSED IN THE REMEDIAL DESIGN AND COMMON DUST CONTROL MEASURES, SUCH AS SPRINKLING WATER OR SPREADING DUST SUPPRESSANT MATERIALS, WILL BE TAKEN TO CONTROL THE DUST DURING REMEDIAL ACTION.

MANY CITIZENS HAD QUESTIONS ABOUT THE AMOUNT OF SOIL THAT WILL BE REMOVED.

EPA RESPONSE: THIS ISSUE WILL ALSO BE ADDRESSED DURING THE REMEDIAL DESIGN PHASE. ACCORDING TO REPORTS FROM THE REMOVAL, DIGGING MAY BE 30-35 FEET DEEP IN SOME AREAS AND 15-20 FEET IN OTHERS. TESTS WILL BE CONDUCTED AND EXCAVATION WILL CONTINUE AS LONG AS CONTAMINATION IS FOUND.

CITIZENS ASKED IF THE SOIL THAT IS REMOVED WILL BE REPLACED WITH NEW SOIL.

EPA RESPONSE: EPA DOES NOT WANT TO LOWER ANY WATER LEVELS FOR AREAS THAT MIGHT BE FLOOD PRONE, SO BRINGING SOIL IN TO REFILL EXCAVATED AREAS WILL BE CONSIDERED. FINAL SITE RESTORATION IS PART OF THE PROPOSED REMEDY.

CITIZENS QUESTIONED THE SAFETY OF THE FUMES THAT MAY BE EMITTED DURING THE EXCAVATION.

EPA RESPONSE: FUMES THAT ARE AT ANY LEVELS OF CONCERN ARE NOT ANTICIPATED. DURING THE REMOVAL OPERATION, THE TESTS CONDUCTED DID NOT INDICATE ANY LARGE CONCENTRATIONS OF FUMES OF ANY CONCERN.

ONE CITIZEN ASKED WHY THERE WERE NO PLANS FOR EXCAVATING AREA RESIDENTS, AS WAS DONE DURING THE REMOVAL.

EPA RESPONSE: MOST OF THE MATERIAL HAS ALREADY BEEN REMOVED. THERE ARE NO DRUMS REMAINING THAT COULD EXPLODE SO THE PRECAUTION IS NOT NECESSARY.

THE STOP REPRESENTATIVE STATED THAT THE COMMUNITY WOULD LIKE TO SEE A SAFETY PLAN IN PLACE BEFORE ANY REMEDIAL ACTIVITY BEGINS AT THE SITE.

EPA RESPONSE: THE HEALTH AND SAFETY PLAN IS AN INTEGRAL PART OF ALL REMEDIAL ACTIONS. SITE SECURITY, DUST CONTROL, AND VAPOR MONITORING ARE ALL CONSIDERED DURING THE FEASIBILITY STUDY. SAFETY PLANS WILL BE INCLUDED IN ALL OF THE DESIGN DOCUMENTS, WHICH WILL BE AVAILABLE TO THE PUBLIC AT THE INFORMATION CITIZENS WERE INTERESTED IN ACQUIRING SOMEONE TO PERFORM INDEPENDENT OVERSIGHT OF THE REMEDIAL ACTIVITIES.

EPA RESPONSE: EPA OFFERS TECHNICAL ASSISTANCE GRANTS (TAGS) TO COMMUNITIES THAT QUALIFY TO HIRE A CONSULTANT TO MONITOR THE PROJECT. INFORMATION ON TAGS IS AVAILABLE IN THE INFORMATION REPOSITORIES.

B. HEALTH CONCERNS

CITIZENS QUESTIONED THE METHODOLOGIES BEING USED FOR THE HEALTH STUDY.

EPA RESPONSE: THE AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY (ATSDR) IS CONDUCTING THE HEALTH STUDY AND IS DETERMINING THE METHODOLOGIES.

ONE CITIZEN ASKED IF THERE WAS A CORRELATION BETWEEN THE CHEMICALS AT THE SITE AND THE NUMBER OF CHILDREN IN THE COMMUNITY WHO HAVE BEEN SICK.

EPA RESPONSE: THE HEALTH ASSESSMENT BEING CONDUCTED BY ATSDR IS CURRENTLY UNDERWAY AND SHOULD BE COMPLETED WITHIN THE NEXT TWO MONTHS.

SEVERAL CITIZENS SAID THAT THEIR ANIMALS DIED AFTER BEING IN CONTACT WITH FOOD WATER THAT HAD RUN OFF THE SITE. OTHERS STATED THAT THE CROPS GROWING IN THEIR GARDENS ARE INEDIBLE. ONE CITIZEN SAID THAT HIS GRANDSON HAS AN INCURABLE DISEASE THAT HIS DOCTOR ATTRIBUTES TO THE CONTAMINATION.

EPA RESPONSE: EPA MUST RELY ON WHAT STUDIES HAVE SHOWN AND THE EVALUATION OF THE SITUATION IS THAT WHEN THE CLEANUP IS COMPLETE, THE SITE WILL NOT POSE A SIGNIFICANT HEALTH RISK TO ANYONE WHO LIVES NEAR THE SITE. THE MISSISSIPPI STATE DEPARTMENT OF HEALTH OFFERED TO INVESTIGATE THE CHILD'S DISEASE.

C. OFF-SITE CONTAMINATION

MANY CITIZENS EXPRESSED CONCERN ABOUT CONTAMINATION THEY ARE AWARE OF OFF-SITE. CITIZENS ATTESTED TO DRUMS BURIED UNDER CONSTRUCTION SITES AND PLACED IN AN OLD GARBAGE DUMP.

EPA RESPONSE: THE STATE OF MISSISSIPPI, DEPARTMENT OF NATURAL RESOURCES, BUREAU OF POLLUTION CONTROL HAS STATED THAT IT WILL LOOK AT THESE SITES TO DETERMINE IF THERE ARE ENVIRONMENTAL PROBLEMS. THE OFF-SITE TESTING THAT EPA HAS CONDUCTED TO DATE SHOW NO INDICATION OF CHEMICALS OFF-SITE AT LEVELS OF CONCERN.

SEVERAL CITIZENS ASKED IF EPA HAD TESTED AREAS AROUND THE SITE FOR CONTAMINATION.

EPA RESPONSE: EPA HAS PERFORMED TESTS ON THE SOIL. NO CONTAMINATED SOIL HAS BEEN DETECTED IN THE OFF-SITE AREAS ADJACENT TO THE SITE.

ONE CITIZEN HAS DRUMS BEHIND HER HOUSE WHICH, SHE SAYS, EPA PROMISED TO REMOVE BUT NEVER HAS.

EPA RESPONSE: EPA WILL LOOK INTO THE PROBLEM.

D. MISCELLANEOUS

CITIZENS ASKED FOR A COMMITMENT FROM EPA THAT THE SITE WILL BE RESTORED TO WHAT THE CITIZENS CONSIDER TO BE A LIVABLE ENVIRONMENT; THEY WANT EVERY PIECE OF CONTAMINATION REMOVED.

EPA RESPONSE: EPA IS COMMITTED TO MAKING THE SITE AREA LIVABLE WHICH IS DONE BY REDUCING THE CONTAMINATION TO A LEVEL THAT IS ACCEPTABLE FOR BOTH ENVIRONMENTAL AND PUBLIC HEALTH CONCERNS.

CITIZENS EXPRESSED CONCERN OVER THE AMOUNT OF INPUT THE POTENTIALLY RESPONSIBLE PARTY (PRP) WILL HAVE REGARDING CLEAN-UP ACTIVITIES.

EPA RESPONSE: BY LAW, THE PRPS MUST HAVE THE OPPORTUNITY TO PARTICIPATE IN THE CLEANUP.

IV. REMAINING CONCERNS

LOCAL RESIDENTS EXPRESSED SEVERAL REMAINING CONCERNS IN REGARD TO REMEDIAL OPERATIONS AT THE NEWSOM SITE. THEY REMAIN CONCERNED ABOUT THE DUST THAT WILL RISE DURING THE CLEAN-UP, ABOUT OFF-SITE CONTAMINATION, AND ABOUT THE RESULTS OF THE ATSDR HEALTH STUDY. EPA WILL CONTINUE TO COORDINATE WITH THE OTHER AGENCIES INVOLVED AND TO GET SITE INFORMATION TO THE CITIZENS.

#TA

TABLES, ATTACHMENT

TABLE 3-1

SEDIMENT SAMPLING DATA
NEWSOM BROTHERS SITE
COLUMBIA, MISSISSIPPI

CHEMICAL	NORTH POND	EAST POND	HORSESHOE POND	CONCRETE DRAINAGE SYSTEM
COMPOUND	UG/KG	UG/KG	UG/KG	UG/KG
PHENOL	62	ND	ND	9,000
PENTACHLORO- PHENOL	117	ND	ND	
TOLUENE	122	ND	ND	1,300,000
XYLENES	80,000	ND	ND	
PCB	10,000	ND	ND	
ETHYL BENZENE	7,700	ND	ND	210,000
BENZO (B)	---	37,500	16,300	---
FLOURANTHENE				
2 METHYLNAPHTHALENE	---	200,000	---	—

TABLE 3-2
CHEMICALS OF POTENTIAL CONCERN
IN ONE-FOOT SOIL SAMPLES FROM WHOLE SITE
NEWSOM BROTHERS SITE
COLUMBIA, MISSISSIPPI

-----CONCENTRATION (MG/KG)-----				
CHEMICAL	FREQUENCY OF DETECTION	GEOMETRIC MEAN	MAXIMUM	BACKGROUND
ORGANICS				
NONCARCINOGENIC PAHS	3/68	0.020	12	0.33
BENZO(G,H,I) PERYLENE	4/68	0.019	1	0.33
2-METHYL- NAPHTHALENE	3/37	0.42	3.2	0.33
ACENAPTHENE	2/68	0.018	0.22	0.33
FLUORANTHENE	4/68	0.019	4.7	0.33
PYRENE	6/68	0.022	3.5	0.33
ANTHRACENE	2/68	0.018	0.30	0.33
PHENANTHRENE	3/68	0.019	1.3	0.33
TOTAL:	10/68	0.54	26	--
CARCINOGENIC PAHS				
INDENO(1,2,3,CD) PYRENE	3/68	0.020	2.3	0.33
CHRYSENE	4/68	0.019	3.1	0.33
BENZO(A) ANTHRACENE	3/67	0.020	2.2	0.33
BENZO(B&OR K) FLUORANTHENE	2/68	0.02	5.0	0.33
BENZO(A)PYRENE	3/68	0.020	1.4	0.33
DIBENZ(A,H) ANTHRACENE	1/68	0.12	14	--
TOTAL:	5/68	0.25	14	0.33

TOLUENE	39/131	0.54	3	0.005
ETHYLBENZENE	9/132	0.025	4	0.005
BENZOIC ACID	13/31	2.7	14	1.6
PENTACHLORO	12/132	0.25	6	1.6
PHENOL				

INORGANICS

BARIUM	35/36	37	640	32-160
CALCIUM	28/36	1,100	8,800	1,000-3,600
COPPER	19/36	8.5	91	4-5
LEAD	32/35	16	320	6-26
MANGANESE	36/36	120	1,600	240-1,400
ZINC	18/36	19	540	11-140

TABLE 3-3

CONCENTRATION OF CHEMICALS IN WASTE MATERIALS SAMPLES BASED ON
EPA REMOVAL ACTIVITIES
NEWSOM BROTHERS SITE
COLUMBIA, MISSISSIPPI

ALL CONCENTRATIONS IN (MG/KG)

CHEMICAL	CONC. RANGE	CONC. RANGE	CONC. RANGE IN	CONCENTRATION
	IN OLD AREA WASTES (A)	NORTH FIELD WASTES (B)	PECAN ORCHARD AND WOODCHIP AREA WASTES (C)	RANGE IN BACKGROUND SOIL (C)
ORGANICS				
ACETONE	ND	ND	ND	0.005
BENZENE	0.07-94.2	279	0.74-950	0.005
BUTYLBENZYL- PHTHALATE	341 - 1 1,500	ND	ND	0.33
CHLOROFORM	111	103	3.5-10.4	0.055
DEHP	0.45-1.8	0.29-28	0.18-4.7	0.33
DI-N-BUTYL- PHTHALATE	0.13-1.5	2.0-17.6	0.85-15	0.33
ETHYLBENZENE	7.5-19.5	0.26-13,500	0.26-23,800	0.005
METHYLBENZENE- ISOMERS	ND	3.7	26.8-90.7	0.005
NAPHTHALENE	ND	1.3	ND	0.33
PENTACHLORO- PHENOL	0.68-643	ND	ND	1.6
PHENANTHERENE	ND	ND	ND	0.33
PHENOL	ND	7.7	0.15-2.97	0.33
1,1,2,2- TETRACHLORO- ETHANE	0.27	ND	ND	0.005
TOLUENE	10.4-119	0.58-12,870	0.11-8,300	0.0035
TOTAL XYLENES	27.2-3,080	0.63-8,280	181-54,300	0.005
TRICHLORO- ETHENE	0.50	ND	ND	0.005

INORGANICS

ARSENIC	0.001-0.78	0.005-3.0	0.03-2.9	2
CHROMIUM	0.03-79	0.34-86	2.3-76	5.3-8
COBALT	ND	9.0	7.1-10.4	10
COPPER	0.03-73	0.9-6.9	0.2-122	4-5
IRON	20.3-4,183	6,180-9,970	94-7,310	5,700-13,000
NICKEL	1.2-60	0.008-6.0	0.13-8	8
TIN	71	ND	ND	8
TITANIUM	ND	ND	ND	ND

(A) SAMPLE TAKEN FROM EPA REMOVAL ACTION SAMPLES 1387, 1360, 1360A, 1357, 1358 AND 1359

(B) SAMPLES TAKEN FROM EPA REMOVAL ACTION SAMPLES 1361, 1362, 1363, 1364, 1365, 1366, 1367, 1368.

(C) SAMPLES TAKEN FROM EPA REMOVAL ACTION SAMPLES A, B, C, D, E, J, K, L, M, N, O, S AND U.

(D) SAMPLES TAKEN FROM CLP SOIL SAMPLES SS-34 AND SS-49 FROM PHASE I RI.

ND = NOT DETECTED

TABLE 4-1
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS FOR GROUND WATER
NEWSOME BROTHERS SITE
COLUMBIA, MISSISSIPPI

-----GROUND WATER CLEANUP GOAL (UG/1)-----

			FEDERAL AMBIENT WATER QUALITY CRITERIA ADJUSTED FOR DRINKING WATER	GOALS SELECTED FOR SITE REMEDATION
CHEMICALS	SDWA MAXIMUM CONTAMINANT LEVEL (MCL)	SDWA MAXIMUM CONTAMINANT LEVEL GOALS (MCLG)		
INORGANICS				
ARSENIC	50	NA	0 (0.025)	50
CHROMIUM (HEXAVALENT)	50	120*	50	50
LEAD	50	20*	5,200	20
MERCURY	2	3*	10	2
NICKEL	13.4	NA	15.4	13.4
ORGANIC				
BENZENE	5	NA	0 (0.67)	5
ETHYL BENZENE	NA	680*	2,400	600
TOLUENE	NA	2,000*	15,000	2,000
PENTACHLORO- PHENOL	0.1**	220*	1,010	0.1
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)	NA	NA	0 (0.0031)	10***
PHENOL	NA	NA	3,500	1,500

NA = NOT AVAILABLE/APPLICABLE

* = PROPOSED VALUE AS OF OCTOBER 1986

** = PROPOSED VALUE AS OF MAY 22, 1989

*** = PRACTICAL QUALIFICATION UNIT BASED ON BENZO(B)FLUORANTHENE

() = THE CRITERION VALUE FOR ALL CARCINOGENS IS ZERO. THE CONCENTRATION
VALUE GIVEN IN PARENTHESES IS FOR AN INCREASED CANCER RISK OF 10-6

TABLE 4-2
 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS FOR
 SURFACE WATER
 NEWSOME BROTHERS SITE
 COLUMBIA, MISSISSIPPI

-----SURFACE WATER CLEANUP GOAL (UG/1)-----

CHEMICALS	FEDERAL AMBIENT WATER QUALITY CRITERIA ADJUSTED FOR DRINKING WATER				GOALS SELECTED FOR SITE REMEDATION
	SDWA MAXIMUM CONTAMINANT LEVEL (MCL)	SDWA MAXIMUM CONTAMINANT LEVEL (MCLG)			
INORGANIS					
ARSENIC	50	NA	48		48
LEAD	50	20*	3.2**		3.2
MERCURY	2	3*	0.012 (0.2)		0.2
ORGANIC					
ETHYL BENZENE	NA	680*	NA		680
PENTACHLORO- PHENOL	NA	220*	13**		13
TOLUENE	NA	2,000*	NA		2,000

NA = NOT AVAILABLE/APPLICABLE

* = PROPOSED VALUE AS OF OCTOBER 1986

** = PH DEPENDENT. FOR ACUTE TOXICITY OF PENTACHLOROPHENOL:
 $\{PCP\} = *1.005(PH - 5.290)$

() = THE CRITERION VALUE FOR ALL CARCINOGENS IS ZERO. THE CONCENTRATION
 VALUE GIVEN IN PARENTHESES IS FOR AN INCREASED CANCER RISK OF 10-6

TABLE 4-5
 ADDITIONAL SEDIMENT/SOIL CLEANUP LEVELS
 NEWSOME BROTHERS SITE
 COLUMBIA, MISSISSIPPI

SEDIMENT/SOIL CLEANUP CONCENTRATIONS (UG/KG)

CONTAMINANT	LIFETIME RESIDENTS
BENZENE (A)	41
CHLOROFORM (A)	197
TOLUENE	3.6 X 10(5)
XYLENES	2.4 X 10(5)
PHENOL	4.8 X 10(5)
NAPHTHALENE	6.3 X 10(5)
DI-N-BUTYL PHTHALATE	1.1 X 10(5)
ETHYL BENZENE	1.2 X 10(5)
PENTACHLOROPHENOL (A,B)	1.2

A - THESE CHEMICALS ARE CARCINOGENS AND SOIL CLEANUP LEVELS REPRESENT A
 10-6 RISK LEVEL

B - PENTACHLOROPHENOL HAS RECENTLY BEEN RECLASSIFIED BY THE AGENCY AS A
 B2 CACINOGEN. A CANCER POTENCY HAS NOT YET DETERMINED. THE
 INFORMATION THAT WE HAVE IT WILL MOST LIKELY FALL BETWEEN 0.2-1.0.
 THE MORE CONSERVATIVE VALUE OF 1.0 WAS USED AS THE POTENCY FACTOR
 FOR DETERMINING SOIL CLEANUP LEVELS